

Digital Transformation of Local Tourism MSMEs Through Website Development at Lestari Wisata Dieng

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Received: Oct 30, 2025

Revised: November 1, 2025

Accepted: Dec. 1, 2025

Published: Dec. 20, 2025

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DOI: 10.63158/SCD.v3i2.52

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Abstract. This community service program supported the digital adaptation of a local tourism MSME by developing a promotional and booking website for Lestari Wisata Dieng. Previously, the business relied mainly on Instagram and TikTok, resulting in an unstructured digital presence that limited information organization, customer convenience, and market reach. Data were collected through digital interviews, document review, and competitor analysis to identify operational needs and user expectations. Development followed a practical workflow: requirements analysis, system modeling using UML diagrams, interface and feature implementation, multi-device and multi-browser testing, and deployment planning to ensure sustainability for MSME use. The resulting website provides destination listings, tour package information, a photo gallery, contact details, and WhatsApp-integrated booking forms that generate structured customer inquiries through a familiar communication channel. This program contributes a realistic, low-barrier model of digital transformation for micro-scale tourism enterprises that is cost-efficient, easy to maintain, and replicable for other rural MSMEs. The platform is expected to improve service accessibility, strengthen customer engagement, enhance online visibility, and increase competitiveness in the Dieng tourism market.

Keywords: Digital Transformation, Local Tourism, MSME Empowerment, Website Development, Community Service

1. INTRODUCTION

In the era of digitalization, the use of information technology has become an essential element for improving the competitiveness of micro, small, and medium enterprises (MSMEs)[1], [2], [3], especially in the tourism sector[4], [5]. Local tourism MSMEs often struggle to reach wider markets due to limited access to digital platforms and technological skills[6], [7], [8]. This is evident in Lestari Wisata Dieng, a micro-tourism business in Central Java, Indonesia, which relies solely on social media such as Instagram and TikTok for promotional activities and still uses manual methods for customer bookings.

Several previous studies have attempted to bridge this gap through various digital solutions. For instance, website-based information systems have been proven effective in expanding market access and enhancing service efficiency for MSMEs in rural tourism[9], [10]. Other research developed integrated e-commerce systems for tourism that included online booking, payment gateways, and customer feedback features[11], [12]. Moreover, a study by Legowo et al. showed that the implementation of web-based promotional media significantly influenced customer trust and decision-making in choosing tour packages[13], [14]. Another study by Singgalen emphasized the role of digital platforms in improving the branding of tourism destinations, highlighting the importance of user experience in website interface design [15], [16]. Meanwhile, the work by Supriadi et al. integrated social media with website content to create a more interactive promotional strategy [17], [18]

Despite these advancements, most of these studies focus on medium- to large-scale tourism businesses or government-managed destinations. Very few researchers have focused on developing digital solutions for microenterprises in remote or rural tourism settings, where resources and digital skills are severely limited. Furthermore, studies exploring the integration of the WhatsApp API for booking in small-scale tourism businesses remain scarce, even though WhatsApp is widely used by local communities. Therefore, this research aims to address the digital gap in small-scale tourism MSMEs by developing a simple, accessible, and responsive website that facilitates both promotion and booking processes using familiar tools such as WhatsApp. The objectives of this research are to (1) implement a user-friendly website tailored to the business process of

Lestari Wisata Dieng, (2) enhance online visibility and service accessibility for the MSME, and (3) provide a replicable model for other local tourism enterprises with similar digital constraints.

2. METHODS

This community service activity adopted a participatory design approach, in which the implementers collaborated directly with the owner of the tourism MSME, Lestari Wisata Dieng, to develop a practical solution aligned with the business's actual needs. The method focused on addressing the business's digital gap in promotion and customer interaction by implementing a website.

2.1. Data Collection Techniques

To identify the real conditions and needs, three primary techniques were used:

Semi-structured Interviews via WhatsApp were conducted with the business owner to explore current business processes, promotional methods, types of tour packages, and customer behavior patterns. This chat-based interview allowed flexible yet focused discussions and is recognized as a useful tool in community-based digital research[19].

1) Digital Document Review

The team collected and analyzed promotional content from existing Instagram and TikTok posts, including customer testimonials, itinerary formats, and pricing information. This helped to structure website content more systematically [20], [21].

2) Competitor Analysis

Several local competitor websites in the Dieng region were reviewed to identify best practices in UI/UX, feature sets, booking flow, and SEO structure. This benchmarking process is essential in applied ICT development for MSMEs [22], [23].

2.2. System Development Method

The system was developed using a waterfall-based web development method, which consists of five stages:

1) Needs Analysis

Defined functional and non-functional requirements based on interviews and document review. The main features include:

- a) Homepage with tour highlights and testimonials
- b) Destination and tour package pages with pricing and itinerary
- c) Photo gallery
- d) Contact page integrated with WhatsApp API
- e) Admin login for managing comments

2) System Design (UML Modeling)

Unified Modeling Language (UML) diagrams, such as Use Case Diagrams and Activity Diagrams, were used to model user interactions with the system. UML helps visualize workflow effectively, especially in non-enterprise settings [4].

3) Interface Development

The front-end was developed using HTML, CSS, and Tailwind CSS, while the back-end functionality and routing used Laravel. All booking forms were connected to WhatsApp for direct messaging using dynamic link generation.

4) System Testing

Manual black-box testing was conducted to ensure functionality across:

- a) Device types (desktop, tablet, mobile)
- b) Browsers (Chrome, Firefox, Safari)
- c) Booking form logic and message accuracy

5) Deployment Planning Although not yet deployed publicly, the final stage involves:

- a) Selecting affordable hosting services (e.g., Niagahoster)
- b) Connecting to a custom domain
- c) SSL configuration and performance monitoring
- d) User testing and content maintenance planning

2.3. Tools and Supporting Technologies

- a) Visual Studio Code (development environment)
- b) WhatsApp API Link Generator (for booking automation)

- c) Google Chrome Developer Tools (for testing and debugging)
- d) Google Drive & Canva (for image and promotional content)

This method is considered effective and scalable for MSME digital empowerment activities in rural areas, aligning with previous research that highlighted simplicity and sustainability as keys to successful ICT interventions[24], [25], [26].

3. RESULTS AND DISCUSSION

The implementation of this community service project produced a website-based tourism information and booking system designed specifically for the operational context of Lestari Wisata Dieng, a local tourism MSME in Central Java. The main outcome is a functional, responsive, and easy-to-manage website that strengthens digital promotion while simplifying how customers inquire and place orders. Instead of forcing a complex e-commerce workflow (which often becomes difficult to maintain for small businesses), the system intentionally adopts a lightweight booking approach via WhatsApp, aligning with the communication habits of most tourism customers in Indonesia and reducing the technical burden on the business side.

From a development perspective, the system was implemented using Laravel for backend structure and routing, Tailwind CSS for responsive UI styling, and standard web technologies (HTML/CSS) for content presentation. This stack was selected because it supports rapid development, clean separation of logic and view components, and scalability for future feature growth. The final website includes the following core modules:

- 1) Homepage: serves as the main promotional gateway, providing a concise overview of Dieng tourism highlights and directing users to packages and destinations.
- 2) Destination listing: provides structured information about available destinations (descriptions, highlights, and visuals) to help visitors compare options.
- 3) Tour packages + WhatsApp booking form: enables users to select a package and generate a pre-filled WhatsApp message, reducing friction and preventing incomplete inquiries.

- 4) Gallery: strengthens persuasive promotion through curated visual storytelling.
- 5) Contact page: supports direct communication and business credibility through address/phone/social links.
- 6) Admin login and content management (CRUD): allows the MSME to update destinations, packages, galleries, and site content without modifying code.

This combination delivers two practical benefits: (1) it helps the business appear more professional and discoverable online, and (2) it supports faster customer conversion by removing unnecessary steps in the ordering process.

3.1. UML-Based Functional Validation (Use Case Diagram)

To ensure the implemented system matched real user needs, functional requirements were formalized using UML modeling. **Figure 1** (Use Case Diagram) clarifies how the system is used by two primary actors: **Admin** and **Website Visitor**. The Admin is responsible for managing all website content and operational pages, ensuring the website remains up-to-date as packages, prices, and destination details change. Meanwhile, Website Visitors primarily consume information (viewing pages and exploring content) and interact with selected features such as booking and commenting.

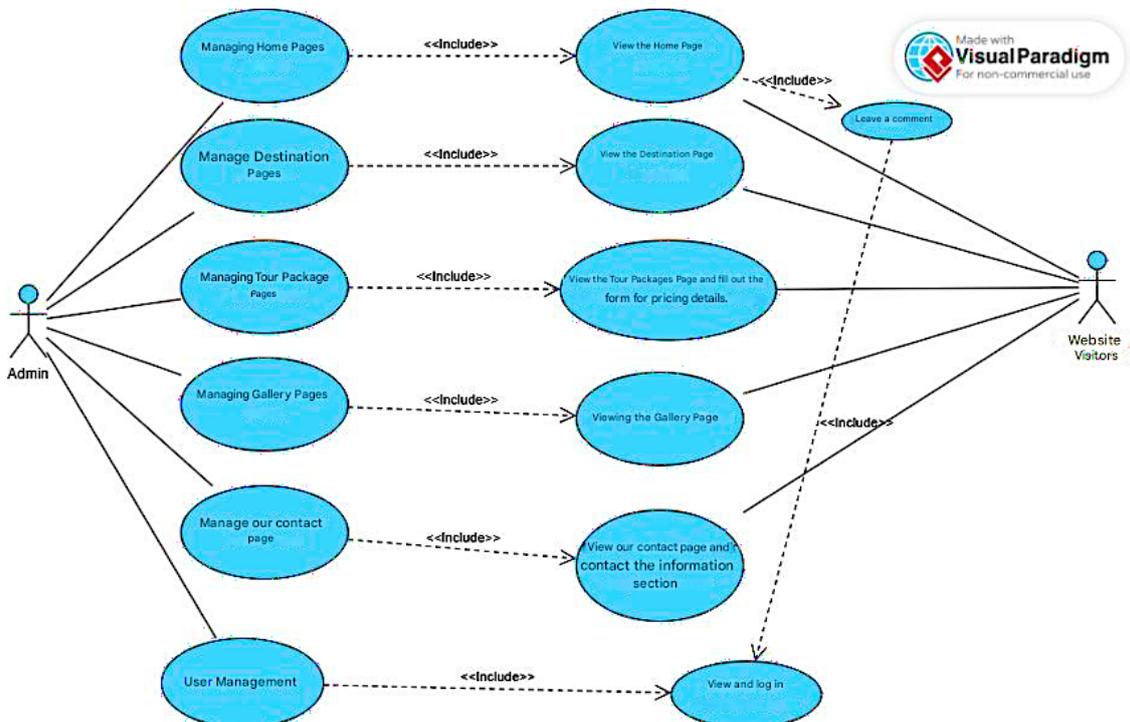


Figure 1. Use Case Diagram of Tour Booking Website

In the diagram, the Admin role includes activities such as managing the homepage, destination content, tour packages, gallery content, and contact/about information. This indicates the system is not merely a static promotional site; it is a content system that can be continuously updated by non-technical users through a controlled interface. For Website Visitors, the ability to view content across modules ensures transparency and improves decision-making. The model also includes interaction features such as comment submission, which is intentionally restricted by login/authentication to support accountability and reduce the risk of spam or harmful content.

This role separation is important in MSME systems: it keeps operational control in the hands of the business while ensuring users have a smooth browsing and inquiry experience. The use case model also helps validate that every major feature implemented in the software corresponds to a real task performed by one of the two actors, reducing the likelihood of unnecessary features and improving overall system clarity.

3.2. Interaction Flow Design (Activity Diagram)

While the Use Case Diagram explains “what” users can do, the Activity Diagram in Figure 2 explains “how” those actions typically flow in real usage. The user journey begins when a visitor accesses the homepage, then navigates to destinations, packages, or the gallery. If the visitor chooses to submit a comment, the system requires authentication before allowing submission.

This interaction flow provides two key advantages. First, it reflects a natural browsing pattern typical for tourism websites—users explore visuals and package options before contacting the business. Second, requiring login prior to comment submission creates a basic form of trust and moderation, because it discourages anonymous spam and encourages more responsible user engagement. In small business contexts where there may be limited staff available to moderate content continuously, this design choice is practical and reduces risk.

The adoption of UML diagrams in this project also served as an alignment tool between the development team and the MSME partner. By translating user needs into diagrams before full implementation, the team minimized misunderstanding and ensured that the developed features followed the intended workflow—an approach commonly

recommended in community technology design and participatory system development [27], [28], [29].

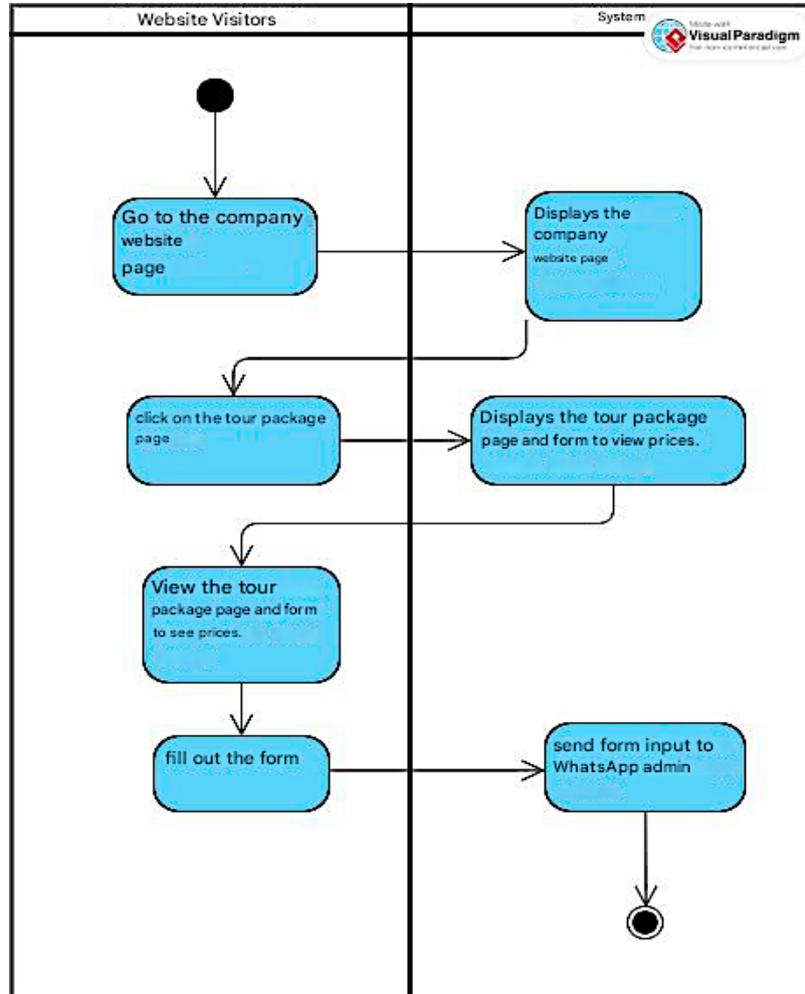


Figure 2. Activity Diagram of Website Visitor's Interaction

3.3. System Testing and Performance Outcomes

After implementation, the system was evaluated through a set of functional and non-functional tests to verify that core features worked correctly across devices and browsers and that the website met usability expectations for a public-facing tourism platform. The testing focused on five essential criteria: mobile responsiveness, WhatsApp booking logic, cross-browser compatibility, admin panel access and CRUD functions, and page load speed. Table 1 summarizes the test results.

Table 1. Website Testing Result Summary

No	Criteria	Expected Outcome	Test Result	Status
1	Mobile Responsiveness	Website adapts to all screen sizes (smartphone, tablet)	All pages responsive	Passed
2	WhatsApp Form Logic	Form auto-generates pre-filled message to business WA	Message sent correctly	Passed
3	Browser Compatibility	Website opens properly on Chrome, Firefox, Safari	All tested successfully	Passed
4	Admin Panel Access	Secure login and access to page management	Login + CRUD functional	Passed
5	Page Load Speed (4G)	Less than 3 seconds	2.4 seconds average	Passed

The mobile responsiveness result is especially significant because most tourism browsing and inquiries typically occur via smartphones. Ensuring that all pages remain readable, navigable, and visually consistent on small screens directly influences user retention. The WhatsApp booking form logic also performed as expected: instead of asking users to manually type inquiries (which often leads to missing details like date, package name, or number of participants), the system generates a structured message that helps both customer and business communicate faster. In real operations, this small automation can reduce back-and-forth messaging and improve the speed of closing bookings.

The admin panel test confirms that the MSME can independently manage content updates—a crucial factor for sustainability after the project ends. A system that cannot be updated easily will quickly become outdated, especially in tourism where pricing, availability, and package configurations often change. Finally, page load speed results (2.4 seconds average under 4G conditions) suggest that the website is sufficiently lightweight for typical mobile network environments, supporting user satisfaction and reducing bounce rates.

3.4. Practical Implications for MSME Tourism Operations

From a business impact perspective, the delivered system supports two operational goals: digital promotion and order facilitation. The promotional aspect is strengthened through structured destination and package pages, improved visual presentation (gallery), and

consistent branding. Rather than relying entirely on social media posts that can be missed or buried over time, the website becomes a stable reference point where customers can view complete information at any time.

The order facilitation aspect is strengthened through WhatsApp integration. This design choice is particularly appropriate for MSMEs that may not be ready for payment gateways, automated invoicing, or complex booking calendars. By keeping the transaction initiation inside WhatsApp—an already familiar tool—the system lowers adoption barriers while still improving the professionalism of customer inquiries. In other words, the site acts like a “front desk” that organizes visitors and sends them into a structured conversation channel.

In addition, the authentication requirement for comments supports credibility. Tourism decisions are influenced by trust signals—photos, testimonials, and feedback. Allowing comments increases engagement, but requiring login reduces misuse and makes moderation more manageable. This balances openness with operational safety, which is important for small organizations with limited monitoring resources.

3.5. Limitations and Opportunities for Enhancement

Although the system met its functional goals, several improvement opportunities remain for future iterations. First, the current WhatsApp-based booking is effective for inquiry and manual confirmation, but it does not yet provide automated availability checking or booking status tracking. Adding these features could reduce workload further, although it would increase system complexity.

Second, while login-based commenting improves moderation, it can reduce participation if users find registration inconvenient. A future enhancement could introduce simpler authentication methods (e.g., social login) while still controlling spam. Third, integrating basic analytics (such as tracking which packages are viewed most often) could help the MSME make better promotional decisions, but this would require additional configuration and training.

Despite these limitations, the current implementation already delivers a sustainable baseline: a responsive tourism website with admin-managed content, structured

promotional pages, and a practical ordering mechanism that aligns with MSME operational realities.

4. CONCLUSION

This community service project shows that a simple, responsive, and WhatsApp-integrated tourism website can serve as an effective pathway for digital transformation among local tourism MSMEs, as demonstrated through the case of Lestari Wisata Dieng. The implemented system strengthened online promotion by organizing destinations, tour packages, and visual content into a clear structure that is easy for visitors to explore and trust. At the same time, the WhatsApp-based booking mechanism reduced customer friction and improved service responsiveness by guiding inquiries into a familiar communication channel without forcing the business to adopt expensive or complex booking infrastructure. The use of UML-based modeling (Use Case and Activity Diagrams) played a key role in translating real operational needs into an implementable design, ensuring that system functions reflected actual user behavior and clearly separated visitor interaction from administrative control. System testing further confirmed that the platform met essential quality standards, including mobile responsiveness, cross-browser compatibility, secure admin access, correct WhatsApp form logic, and fast loading performance under typical network conditions. Overall, the project delivers a practical, scalable, and replicable digital empowerment model for rural tourism enterprises—one that enhances competitiveness, expands market reach, and supports the long-term growth of sustainable, community-based tourism through accessible technology.

ACKNOWLEDGMENT

The authors would like to express their deepest gratitude to Universitas Mercu Buana Yogyakarta, especially the Faculty of Information Technology, for the support and guidance throughout the implementation of this community service project. Special thanks are also extended to the owner of Lestari Wisata Dieng for the cooperation and openness during data collection and website development. This project would not have been possible without the commitment of all team members who contributed their time, expertise, and creativity to empower local tourism MSMEs through digital innovation.

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