

Website Design and Construction as a Publication Media for MSMEs in the Tembolak Area Using the Laravel Framework

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ABSTRACT: The development of information technology provides opportunities for Micro, Small, and Medium Enterprises (MSMEs) to expand their business promotions through digital media. However, MSMEs in the Tembolak area, Jempong Village, Mataram City, do not yet have a centralized information media that can be used to present business information to the public effectively. This condition causes MSME information to remain scattered and difficult to access by potential customers and tourists. This study aims to design and build a website as a publication medium for MSMEs in the Tembolak area using the Laravel framework. The system development method used is the Waterfall method which includes the stages of needs analysis, system design, implementation, and testing. The system design was carried out using UML and ERD, while the system testing used the Black Box Testing method to ensure all functions run according to requirements.

Keywords: Design, Website, MSMEs, Laravel, Waterfall, UML, ERD, Tembolak, Jempong, Mataram.

I. INTRODUCTIONS

Advances in information technology have encouraged various sectors, including Micro, Small, and Medium Enterprises (MSMEs), to utilize digital media as a means of publication and promotion. The use of digital technology can help MSMEs expand their reach, increase their competitiveness, and make it easier for the public to obtain information about products and services quickly and efficiently. [1]. In addition, MSMEs have a strategic role in driving regional economic growth through

job creation, increasing community income, and strengthening the local economy. [2]. Therefore, digitalization is a crucial effort to support the development and sustainability of MSMEs.

The Tembolak tourist area in Jempong Village, Mataram City, is a culinary MSME center with significant potential to support the tourism sector and the regional economy. However, observations revealed that MSME information is still published separately through each business owner's social media, and there is a lack of website-based information media capable of presenting MSME data in an integrated manner. This situation makes it difficult for the public and tourists to obtain comprehensive information about business locations, products, and MSME contact information. Furthermore, interviews revealed that some MSME owners still experience difficulties using digital systems due to their interfaces being less simple and navigation difficult to understand.

Several previous studies have developed information systems and websites as promotional and marketing tools for MSMEs. These studies generally focused on product catalogs, digital promotions, online transactions (e-commerce), and internal data management. MSME [3] [4] [1]. Several studies have utilized the Laravel framework and the Waterfall method in developing web-based information systems. However, there are still few studies specifically developing websites as integrated publication media for MSMEs within a single area without focusing on online transactions. Therefore, this study seeks to fill this gap by developing a website that functions as an information center for MSMEs in the Tembolak tourist area, allowing business information to be presented in a structured, centralized, and easily accessible manner.

Based on these challenges, this study designed and built a website as a publication media for MSMEs in the Tembolak tourist area using the Laravel framework and the Waterfall development method. The developed website provides features for publishing MSME information, MSME registration, data management by administrators, a business gallery, and an information page accessible to the public. System quality was evaluated using Black Box Testing to ensure all functions function as required, while ease of use was assessed through a user questionnaire. The research results are expected to serve as an integrated publication media for MSMEs, supporting the promotion of the Tembolak tourist area and facilitating public access to information about available MSMEs.

II. RELATED WORK

Various studies have shown that websites are an effective solution to support the digitalization of MSMEs, especially in the dissemination of information, promotion, and management of business data. [3] developed an MSME website in Sungai Kapih Village using PHP as a digital promotional tool. The resulting system improved public access to MSME information, thereby helping expand the reach of business promotions.

Research by [1] Developing a website-based MSME information system in Manjung Village to address promotional limitations caused by low digital skills among business owners. The website

provides product information and supports the ordering process, increasing promotional effectiveness, although several features still require refinement.

[5] Integrating tourism and MSME information through a WordPress-based website using Research and Development (R&D) methods. Evaluation results showed that the system achieved a high level of feasibility based on functional testing and the System Usability Scale (SUS), thus being deemed effective as a promotional medium for tourism areas and MSMEs.

Next, [4] Developed an MSME e-catalog website using the Laravel framework with a Model–View–Controller (MVC) concept. This system simplifies MSME data management and dynamically presents business information, making it easier for administrators to update content.

Research [6] The Waterfall method was applied in developing a web-based MSME information system. This approach results in a structured development process, allowing the system to be built according to user needs and easy to maintain.

[7] developed an MSME information system using the Laravel framework and the Prototype method. The resulting system improves business data management efficiency, accelerates administrative processes, and supports decision-making through more integrated information management.

Research by [8] utilizing a WordPress-based website as a promotional medium for MSMEs and agrotourism. The research results show that digitalization of promotions can expand the reach of information, although its effectiveness is still influenced by the community's level of digital literacy and the availability of technological infrastructure.

Meanwhile, [9] Developed a web-based online sales application using the Rapid Application Development (RAD) method. The system successfully supported transaction processes, stock management, and report preparation more efficiently, and was declared to be performing well based on functional testing results.

Based on these studies, MSME website development generally focuses on promotional media, product catalogs, online transactions, and internal business data management. Various development methods, such as Waterfall, Prototype, R&D, and RAD, are used according to the specific system requirements. The most commonly utilized technologies are PHP, the Laravel or CodeIgniter frameworks, and MySQL databases.

Unlike previous research, this study developed a website that functions as an integrated publication medium for MSMEs within a single area, rather than as an online transaction platform. The website is designed to centrally present information about MSMEs in the Tembolak tourist area, making it easier for the public and tourists to obtain information about MSME locations, profiles, and products. Furthermore, the system is equipped with a registration and verification mechanism for MSMEs by administrators to ensure the accuracy of published data. This approach is expected to support collective regional promotion and increase the visibility of MSMEs in Jempong Village, Mataram City.

III. METHOD

This study uses the Waterfall software development method to build a website as a publication medium for MSMEs in the Tembolak tourist area, Jempong Village, Mataram City. This method was chosen because it has systematic and sequential stages, allowing for a structured system development process, from needs analysis to testing. Research data was obtained through observation, interviews with MSME actors, documentation, and literature studies related to MSME digitalization and web-based system development. The research flow is shown in Figure 1.

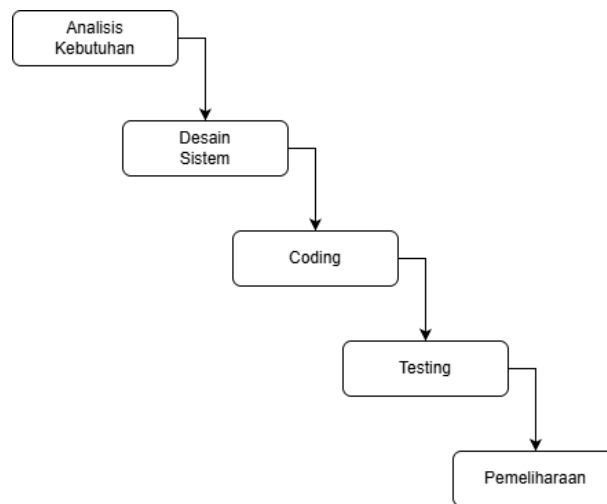


Figure 1. waterfall method Stages

A. Data Collection

Data collection was conducted using three techniques: observation, interviews, and documentation. Observations were conducted to identify the actual conditions of MSMEs in the Tembolak area, particularly regarding the publication media used. Interviews were conducted with MSME owners to obtain information regarding system requirements and obstacles in the business promotion process. Documentation was used to collect supporting data in the form of business profiles, product photos, and other information needed for website content.

B. System Development

The website was developed using the Waterfall method, which consists of five stages: needs analysis, system design, implementation, testing, and maintenance. During the needs analysis stage, the system's functional and non-functional requirements were identified based on the data collection results. The design phase resulted in a system design consisting of Use Case Diagrams, Entity Relationship Diagrams (ERDs), database structures, and user interface designs. The system

was then implemented using the Laravel framework with the PHP programming language and a MySQL database.

C. System Design

The system design phase was conducted after the needs analysis process was completed. The design aims to produce a system design that meets user needs and serves as a reference for the implementation process. The system design was developed using Unified Modeling Language (UML) and Entity Relationship Diagrams (ERDs) to model business processes, relationships between entities, and database structures.

Use Case Diagrams are used to illustrate the interactions between users and the system. The website involves three main actors: the administrator, MSMEs, and visitors. The administrator has access rights to manage MSME data, verify registrations, manage galleries, and view user messages. MSMEs can apply for business registration through the website, while visitors can access MSME information without authentication.

Furthermore, an Entity Relationship Diagram (ERD) is designed to illustrate the database structure used in the system. The database consists of Users, MSMEs, Galleries, and Messages entities, which are interconnected to support administrator authentication, MSME data management, business documentation storage, and visitor message management. The database design ensures structured data storage, reduces redundancy, and streamlines information management.

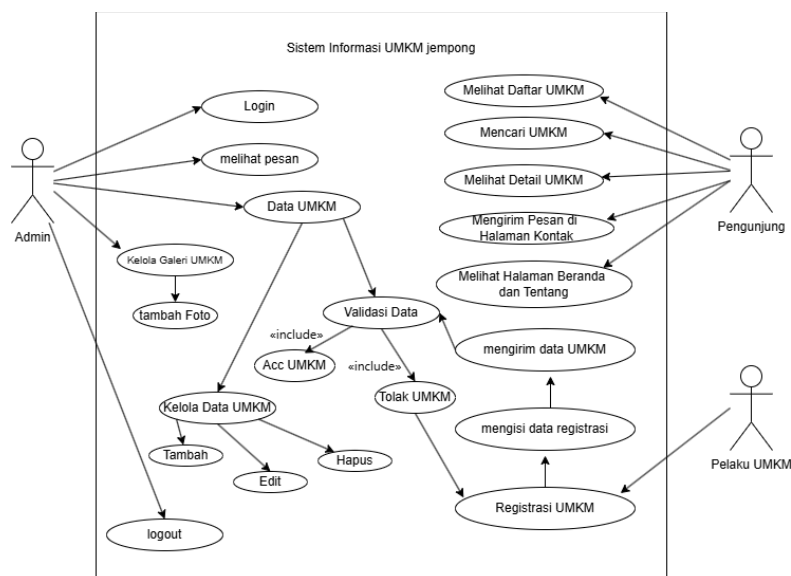


Figure 2. Use Case Diagram of Jempong MSME Information System

D. Interface Design

The website interface is designed with the principles of simplicity, responsiveness, and ease of use in mind, ensuring accessibility for a wide range of users, including administrators, MSMEs, and the general public. The interface design was developed using the Laravel framework, with a display that adapts to the device's screen size, ensuring comfortable use on both computers and mobile devices.

The main website page consists of the homepage, MSME list, MSME details, about page, contact page, and MSME registration form. The administrator side provides a login page, dashboard, MSME data management, registration verification, gallery management, and message management. The interface design focuses on ease of navigation and structured information presentation so that users can access information and manage data more efficiently.

E. System Testing

After the implementation process was completed, the system was tested using the Black Box Testing method to ensure each feature functioned according to user needs. Testing was conducted on key features, such as administrator login, MSME data management, MSME registration, gallery, and contact page. In addition to functional testing, a questionnaire was distributed to MSMEs and the general public to determine the level of usability of the developed website.

IV. RESULT AND DISCUSSION

A. System Implementation

The website, a publication media for MSMEs in the Tembolak tourist area, was successfully developed using the Laravel framework, tailored to user needs. The system consists of a public page (frontend) that presents MSME information to the public and an administrator page (backend) used to manage MSME data.

The main features available include the homepage, MSME list, MSME details, gallery, MSME registration form, contact page, and administrator dashboard. Each MSME registration will be verified by the administrator before being displayed on the public page, ensuring the information presented remains valid and well-managed.

a. Interface Implementation

1. Login Page

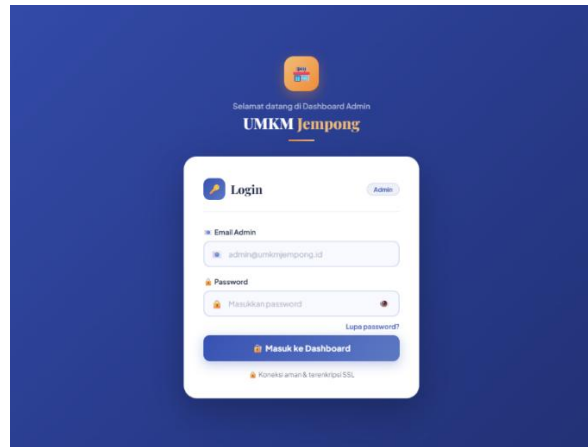


Figure 3. Login Page

The admin login page serves as an authentication gateway before administrators log in to the system. This page is used to ensure that only authorized users can manage website data.

Features available on the admin login page include:

- Enter the administrator's email address.
- Enter the password.
- Login button to access the dashboard.
- Show or hide password.
- Validation if the entered email or password is incorrect.
- Session security system for more secure dashboard access.
- Through this page, administrators must enter their registered account to access the system management features.

2. Admin Dashboard Page

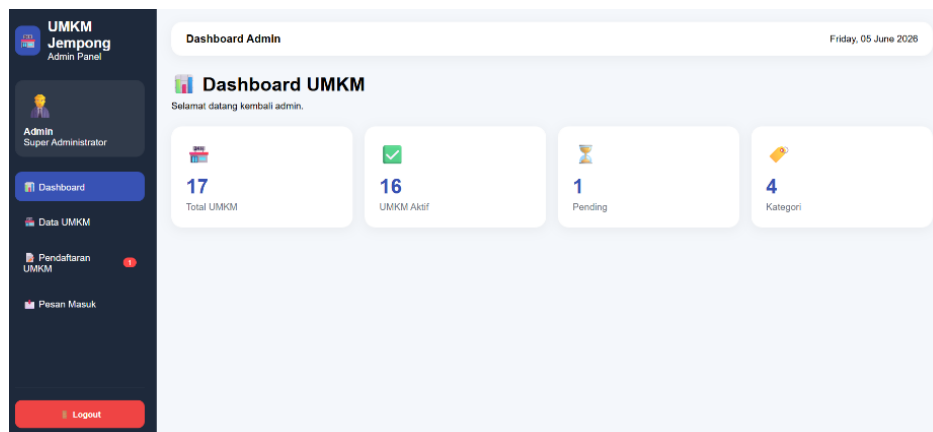


Figure 4. Jempong MSME Admin Dashboard Page

The admin dashboard is the main page that appears after the administrator successfully logs in. This page serves as the central management and monitoring point for all data in the system.

Features available on the admin dashboard include:

- Displays the total number of registered MSMEs.
- Displays the number of active MSMEs.
- Displays the number of MSMEs awaiting approval (Pending).
- Provides an MSME data management menu.
- Provides a registration page for MSMEs entered from the website.
- Provides a page for incoming messages from users.
- Provides an approval (ACC) and rejection feature for MSME data.
- Provides features for adding, editing, and deleting MSME data.

With the admin dashboard, data management can be more centralized and makes it easier for administrators to monitor system activity.

3. Home Page

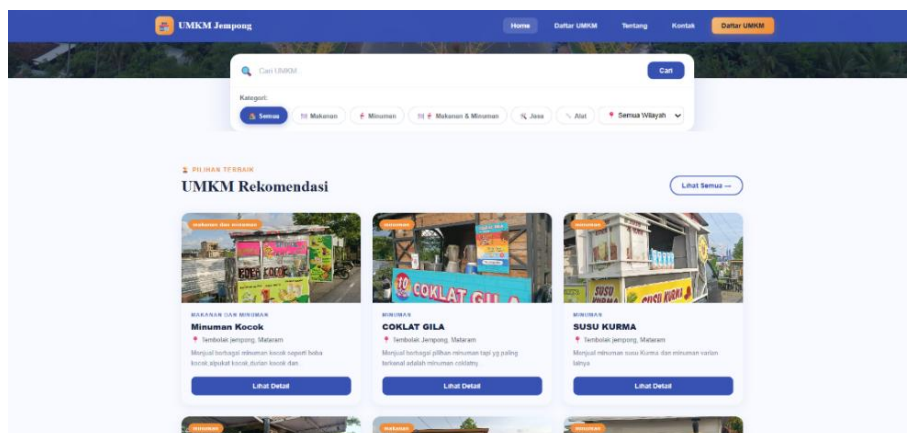


Figure 5. Home Page

The home page is the first page users see when opening a website. This page serves as the primary information source for visitors.

The features available on the home page include:

- Displaying introductory website information.
- Displaying a brief description of system services.
- Displaying featured or newest MSMEs.
- Providing navigation buttons to other pages.
- Displaying promotional information and an invitation to register as an MSME.

The home page is designed to give visitors a quick overview of the website.

4. MSME list page

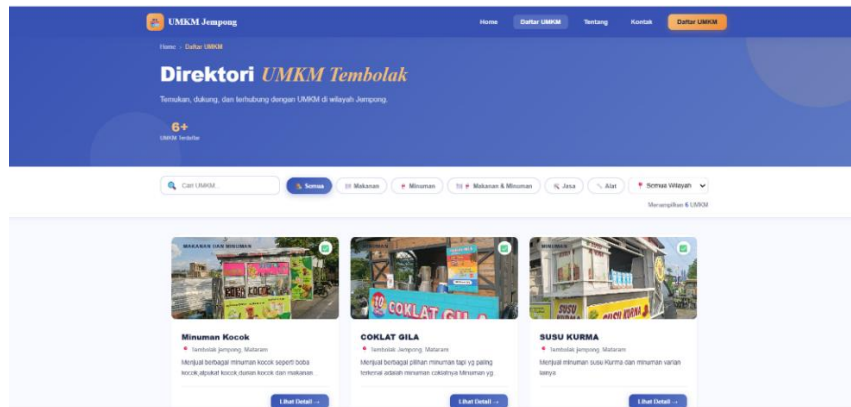


Figure 6. UMKM list page of Jempong UMKM Website

The MSME list page is used to display data on MSMEs that have received administrator approval and are active, making them accessible to the public.

Features available on the MSME list page include:

- Displays a list of active MSMEs.
- Displays the MSME name.
- Displays the business category.
- Provides a MSME Search and Category Feature
- Displays the MSME image or identity.
- Provides a button to access the MSME details page.

The system also provides an MSME details page that displays more complete information about the selected MSME.

5. MSME Detail Page

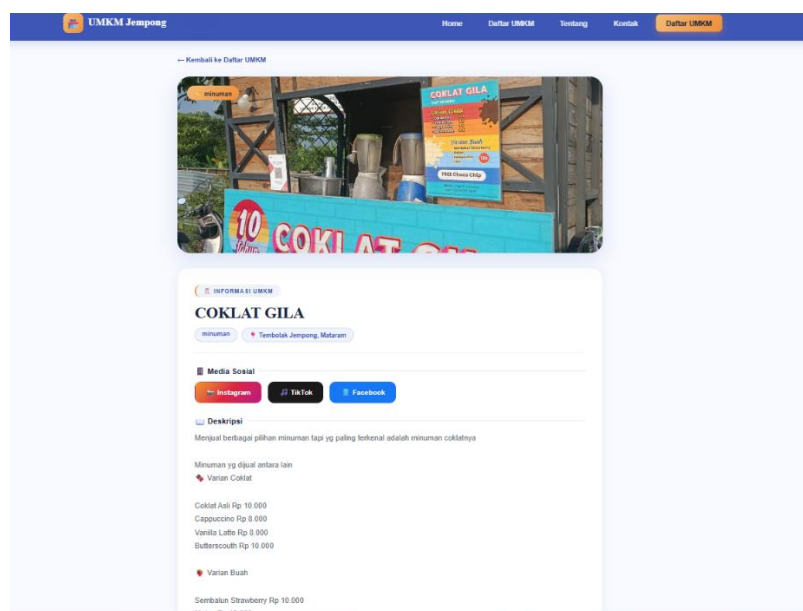


Figure 7. Description on the MSME Detail Page

Features on the MSME details page include:

- Displaying complete MSME information.
- Displaying a business description.
- Displaying a MSME photo gallery.
- Displaying the business address and location.
- Displaying the MSME's social media accounts.
- Displaying a Google Maps link, if available.

The details page allows users to obtain more complete information about MSMEs before visiting or seeking further information.

6. About Page



Figure 8. About Page of Jempong UMKM Website

The about page contains information about the vision and mission of creating the website.

7. Contact Page

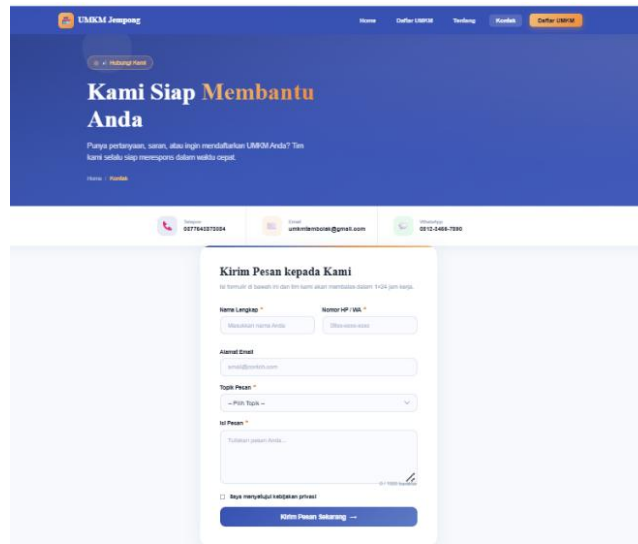


Figure 9. Jempong MSME Website Contact Page

The contact page serves as a communication medium between visitors and website administrators.

The features available on the contact page include:

- Message submission form.
- Sending a message.
- Entering the sender's name.
- Entering a WhatsApp number.
- Entering an email address.
- Selecting a message topic.
- Message content field.
- Form validation before sending.
- Saving messages to the system.

Messages sent by visitors will be logged into the admin page so they can be read and further managed.

8. Register Page

The screenshot shows the 'Pendaftaran UMKM' (UMKM Registration) page. It features a progress bar at the top with three steps: 'Data Pribadi' (Personal Data), 'Data Usaha UMKM' (UMKM Business Data), and 'Lokasi Usaha' (Business Location). The 'Data Pribadi' section includes fields for 'Nama Pribadi' (Personal Name), 'Email', 'No. HP' (Phone Number), and 'Alamat' (Address). The 'Data Usaha UMKM' section includes fields for 'Nama Usaha' (Business Name), 'Jenis Usaha' (Business Type), 'Alamat Usaha' (Business Address), 'Deskripsi Usaha' (Business Description), 'Instagram', 'Facebook', 'Twitter', 'Link Google Maps', and 'Foto Lokasi Usaha' (Business Location Photo). A map is displayed at the bottom of the form for location selection.

Figure 10. Filling Place on the Register Page

The MSME registration page is used to register new MSMEs into the system.

Features available on the MSME registration page include:

- MSME data registration form.
- Enter MSME name.
- Enter business category.
- Enter address.
- Enter business description.
- Enter social media accounts.
- Enter Google Maps location.
- Upload supporting data if necessary.
- Save registration data.

Data submitted via the registration form does not immediately appear on the public page. The system will first save the data with a Pending status. The administrator then conducts a review and approval process before the MSME is displayed on the public list.

B. System Testing

Testing was conducted using the Black Box Testing method to ensure all website functions operate according to system requirements. Testing included the administrator login feature, MSME registration, MSME data management, gallery, MSME detail page, and messaging. Test results showed that all features functioned according to the designed scenario, ensuring the website was usable without any functional errors in the main features.

C. User Evaluation

The evaluation was conducted by distributing questionnaires to 30 respondents, consisting of 10 MSME owners and 20 members of the public, using a Likert scale. The assessment covered aspects of appearance, ease of use, ease of access to information, and system performance.

The evaluation results showed that the website received a score of 80.92%, which falls into the Very Good category. The highest score was for system stability (89.33%), while the lowest score was for the presentation of detailed MSME information (74.00%). Nevertheless, all indicators received scores in the Good to Very Good category, thus the website is deemed capable of supporting MSME publications and facilitating public access to information.

Table 1. Summary of Questionnaire Results

Question Code	Total Real Score	Ideal Maximum Score	Percentage of Achievement (%)	Eligibility Category
Q1	123	150	82,00%	Very good
Q2	120	150	80,00%	good
Q3	122	150	81,33%	Very good
Q4	123	150	82,00%	Very good
Q5	115	150	76,67%	good
Q6	111	150	74,00%	good
Q7	134	150	89,33%	Very good
Q8	123	150	82,00%	Very good
Total	971	1200	80,92%	Very good

D. Discussion

The results of the study indicate that the developed website successfully meets the research objectives as a publication medium for MSMEs in the Tembolak tourist area. The use of the Laravel framework supports structured data management, while an administrator verification mechanism ensures that published information is validated. Based on the results of functional testing and user

evaluation, the system is deemed suitable for use as an integrated information medium for MSMEs and the public.

V. CONCLUSION

This research successfully developed a website as a publication media for MSMEs in the Tembolak tourist area using the Laravel framework with the Waterfall method. The website built provides features for MSME data management, business registration, galleries, MSME detail pages, and data verification by administrators so that the information presented is more structured and easily accessible to the public. The results of testing using Black Box Testing showed that all main functions of the system run according to requirements. In addition, the results of user evaluation involving 30 respondents obtained a score of 80.92% with a Very Good category, which indicates that the website is easy to use and able to support the publication and dissemination of MSME information in the Tembolak area.

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