Website Design of Madurejo Sleman's Pengklik Tourist Attraction Using the Waterfall Method

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Tegar Satria Iman Saputra [a], Muhammad Sholeh [a*], Aji Pranoto [b], Renna Yanwastika Ariyana [a], Putri Indriani [a]

[a] Informatics Study Program, Faculty of Science and Information Technology, Universitas AKPRIND Indonesia, Indonesia
[b] Mechanical Technology Study Program, Vocational Education Program, Universitas AKPRIND Indonesia, Indonesia

Abstract

Website development is of the important strategies in promoting tourist attractions and as an effort to improve access to information for tourists. This research aims to design and develop a website for Pengklik Madurejo tourist attraction, Sleman using the Waterfall method. This method was chosen because of its systematic and structured approach. The development stages begin with a needs analysis to identify the main features required, such as tourist attraction information, photo gallery, event schedule, and reservation system. Next, at the design stage, the system architecture and user interface were designed to provide an intuitive and engaging experience for users. Implementation is done by developing front-end and back-end components according to the design that has been made. Thorough testing is done to ensure the functionality, compatibility, and security of the website before launching. The development of this tourism website aims to improve the promotion and marketing of Pengklik tourist attraction. Pengklik tourist attraction is located in Madurejo Village, Sleman. The website displays various information about tourist attractions, MSME products, and activities or events that will be held. The results show that this website makes it easier for tourists and MSME players to obtain and disseminate information, as well as support the promotion and marketing of local products. The use of the website is expected to encourage economic growth in the area and increase the reach and involvement of users.

Keywords: Website; Travel; Pengklik; Waterfall; MSME
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SDGs: Decent Work and Economic Growth (8); Industry, Innovation and Infrastructure (9); Sustainable Cities and Communities (11); Partnerships for the Goals (17)

1.0 INTRODUCTION

The rapid advancement of information technology, especially in the era of the Industrial Revolution 4.0, has brought major changes to various sectors, including tourism. This technology enables automation, more efficient data exchange, and new ways of promoting and managing tourist attractions. One form of technology utilization in tourism is through a website, which acts as a medium of information and promotion. Websites make it easy for tourist attraction managers to introduce their destinations to a wide audience by providing accurate and easily accessible information. In addition, potential tourists can also obtain up-to-date information, make reservations, and plan their visits more effectively. Evolving information technology not only improves operational efficiency, but also expands opportunities to introduce tourist destinations to the global market, support economic growth, and strengthen the competitiveness of the tourism sector (Tri Rachmadi, 2020; Pardede et al., 2019).

2.0 LITERATURE REVIEW

Pengklik Madurejo Tourism Object in Sleman is one of the tourist destinations that has great potential, but is still not optimally utilized in terms of digital promotion. Currently, Pengklik Madurejo does not have an adequate digital platform to disseminate information related to its location, facilities, tourist activities, and other attractions. This is a challenge in attracting visitors and increasing the number of tourists. To answer these challenges, it is necessary to design a website that is able to display comprehensive information about Pengklik Madurejo Tourism Object. This design is expected to have a positive impact, both in terms of promotion and easy access to

information for tourists. One of the efforts to increase website tourism promotion is by using website media (Pranoto et al., 2024).

Web-based media plays a very crucial role in advertising and marketing activities, especially in today's digital era. With its interactive characteristics, the website not only provides information, but also allows direct interaction between businesses and consumers. This creates a more engaging and personalized experience for users. In addition, the global scope of websites allows businesses and organizations to reach potential customers from different parts of the world effectively and effciently (I Gusti Bagus Rai Utama, 2019).

Unlike traditional media that often have geographical and time constraints, websites can be accessed anytime and anywhere, giving companies the opportunity to promote without limits. The use of analytics tools also allows marketers to understand consumer behavior better, so they can optimize their marketing strategies. Thus, the existence of web-based media is not just an addition, but an important element in modern marketing strategies, driving business growth and increasing competitiveness in the global market (Sibagariang et al., 2021).

Websites can provide real-time access to information and promotional content for users in different regions, thus expanding the market without geographical restrictions. One of the main advantages of the web is interactivity, which enables two-way communication between advertisers and consumers (Samodra et al., 2019). Through the website, users can provide feedback, ask questions, or conduct transactions directly. In addition, in terms of cost, web media offers a more cost-effective advertising solution than print or television advertising, and is supported by analytical tools that help measure campaign effectiveness in real-time (Lustono & Laila Cahyani, 2020; Radini et al., 2021). Websites have various advantages so that the use of websites as promotional media is a strategic choice in online advertising and marketing, both to build brand awareness, convey product information, and establish relationships with customers through interesting and relevant content (Noya et al., 2021).

Understanding the functions and characteristics of web-based media is essential, especially in the context of advertising and marketing. Web-based media offers various advantages, such as global coverage, interactivity, and flexibility in content presentation (Ilmiah & Grafis, 2019). This makes the web an ideal platform for online promotion and marketing activities. Through the web, businesses can reach a wider audience and deliver marketing messages effectively. The web also allows for more specific targeting based on user behavior and preferences, thus increasing efficiency in marketing campaigns. With sufficient knowledge regarding the use of web-based media, companies can maximize the potential of digital for advertising and marketing activities, making it a good choice for promotion in this digital era (Ziyan Zakiyah & Ariffudin Islam, 2022).

Digital technology is not only used as a medium for information acquisition and remote communication, but also in the digital economy. Digital technology can be an important source of profit for businesses in the digital era (Budiman Nasution, 2022). By utilizing the digital economy, economic actors can enter a larger market and increase competition between service products from the micro to macro level. This digital economy is expected to encourage economic growth in Indonesia. So it is hoped that the use of promotion through the Pengklik Tourism Object website can also help the economy of MSME players. The implementation of the website needs socialization to MSME players and to tourism managers regarding how to use and what is presented on the website that has been created. Furthermore, the socialization and training activities carried out increased the knowledge and skills of partners in using the internet as a promotional medium by an average of 76% (Rahmat et al., 2019).

Research that developed a website for promotional media was conducted by Sutoyo. In his research Sutoyo built a tourist information system website that is used to process data about tourist attractions that can be directly accessed by visitors. This system also helps tourists to more easily recognize and disseminate information about tourist attractions widely. Website is an information system site that can be accessed quickly (Sutoyo et al., 2022). For now, marketing about Pengklik Tourism Objects is still quite lacking, because the Tourism Object has been established since 2018, it still hasn't gotten its name in the eyes of Yogyakarta tourists, especially locals. Promotion and marketing have been carried out by residents assisted by the Sleman district government, starting from marketing using social media has been carried out by local residents, but it still does not support many visitors who come to the Tourism Object.

Based on the introduction, this research aims to promote Pengklik Tourism Object through the website. Website development is not only to promote Pengklik Tourism but also to market products from MSME (Micro, Small and Medium Enterprises). The website is one of the solutions in increasing product reach by developing a website to market products and reach consumers. Entering the digital era where everything can be controlled remotely using internet equipment connected to the device.

Pengklik Tourism Object offers cultural and agricultural tourism with a beautiful natural atmosphere. This tourist attraction is located in Madurejo Village, Prambanan District, Sleman, Yogyakarta Special Region. The nuances of tourism in Pengklik are in the form of rice fields and plantations called Pengklik Flory, Japanese caves full of the history of Indonesian independence, the King's Tomb which is still related to the Yogyakarta sultanate, and there is a place where tourists can relax at Cafe Pengklik while looking at the view of Pengklik Flory. Information technology plays a role in the introduction and existence of areas that have tourism potential. This existing tourism potential must be managed properly, so that it can provide benefits to the community.

3.0 METHODOLOGY

Data Analysis Technique

The research method is a scientific approach that aims to obtain valid data in order to discover, develop, and prove certain knowledge. By using research methods, researchers can explore the information needed to understand phenomena, solve problems, and provide relevant solutions to existing problems. This method is very important in research because it ensures that the data obtained is accurate, accountable, and useful for the development of knowledge and practical applications (Muhammad Ramdhan, 2021; Noviyanti et al., 2021).

Methods in Website Design

Website design methods are systematic steps used to build a website that is functional, effective, and in accordance with user needs and organizational goals. One of the commonly used methods in website development is the Waterfall method (Abdul Wahid, 2020). This method involves a linear and sequential process, where each stage must be completed before proceeding to the next stage (Rahmat Kurniawan, 2023). The stages in the Waterfall method usually include:

1. Needs Analysis: At this stage, the collection and analysis of user needs and business objectives to be achieved through the website are carried out. This information is used to determine the features, functions, and structure required on the website.
2. System Design: Based on the results of the analysis, the website structure and design are designed, including the creation of wireframes, sitemaps, and visual layouts. This design should consider both functionality and user experience aspects.
3. Implementation (Development): Once the design is approved, website development takes place. The development team begins to code the program, integrate the necessary functions, and ensure that the website runs according to the specifications that have been designed.
4. Testing: At this stage, testing is done to ensure that the website functions properly and that there are no bugs. Testing includes aspects of functionality, performance, security, and compatibility with various devices and browsers.
5. Maintenance: After the website is launched, maintenance is carried out to ensure that the website continues to function optimally. This includes bug fixes, content updates, and development of additional features according to user needs.

4.0 RESULTS AND DISCUSSION

Database

The use of a database in this program aims to store and manage data from the various menus provided, such as News, Events, and MSME. Each of these entities represents a different category of information that can be accessed by users. The News entity will contain information regarding the latest news or other important relevant information, complete with details such as title, content, publication date, and related images. The Event entity will store data on upcoming or ongoing events, including details such as event name, location, date, and event description. Meanwhile, the MSME entity will include information about Micro, Small, and Medium Enterprises, including business profiles, products or services offered, and contact information.

In this program, an admin panel will be provided to facilitate content management by administrators. Through the admin panel, administrators can add, change, or delete data within the News, Events, and MSME entities. Thus, the use of this database not only helps in structured and organized data storage, but also makes it easier to manage and update information, so that users always get the latest and relevant information.

Figure 1. Database design of Pengklik Tourism Website

In Figure 1, the database design consists of two main tables: posts and admin. The posts table stores all content displayed on the website, including news, events, and MSME-related data, distinguished using the category and umkm_subcategory fields. Meanwhile, the admin table manages access credentials for content administrators. Although there is no direct relational constraint between the two tables, they function cohesively in supporting structured content publishing and access control.

Home Page Implementation

The home page implementation results serve as the main entrance for users when accessing the website. On this page, users are greeted with various attractive visual elements, such as image sliders or promotional banners that display the main attraction of the tourist attraction and other important information. In addition, the home page presents a brief summary of the main content available on the website, including the latest news, upcoming events, and information about MSME involved in the Pengklik tourism area. This design is designed to provide an informative and engaging user experience, and make it easier for visitors to navigate and find the information they need. The display of the home page implementation results is in Figure 2.

Figure 2. Front page of the wisatapengklik.com website

In Figure 1, the website is used to display information on the potential of the Pengklik tourism site and can be used to increase user engagement by displaying dynamic and regularly updated content, ensuring that the information presented is always relevant and interesting.

Article Page Implementation

The results of the implementation of the article page, presents content - content about the history and information of tourist attractions that can be visited by tourists. Figure 3 shows the appearance of the article page.

Figure 3. Article page of wisatapengklik.com website

Figure 3 shows the implementation of the article page, which is designed to present complete information about each published news or article. This page allows users to read the article in depth, view related images, and interact through the comment feature or share the article to social media. The main focus in the implementation of this page is ease of navigation, clean appearance, and comfortable typography, thus providing an optimal reading experience for users.

Event Page Implementation
The results of the event page implementation, which presents detailed information about upcoming and past events. Users can find event schedules, brief descriptions, locations, as well as additional details such as how to register and participate. This page is also equipped with an interactive calendar feature or a list of events sorted by date, to make it easier for users to find relevant event information and encourage active participation. Available in figure 4.

Figure 4. Event page of wisatapengklik.com website

Implementation of MSME Page
The implementation of the MSME page is designed to display complete information about Micro, Small, and Medium Enterprises involved in economic activities in the Pengklik area. On this page, users can find various MSME profiles that describe a brief description of the business, the products or services they offer, and contact information that makes it easy for visitors to contact these MSME. Each MSME profile comes with product images, prices, and other details that help promote the product effectively. The resultant MSME page provides a visually appealing and accessible experience, as seen in Figure 5, which highlights the functionality and aesthetics of design in promoting local businesses on digital platforms.

Figure 5. MSME page of thewisatapengklik.com website

In Figure 5, this page focuses on presenting clear and interesting information, with the aim of supporting the promotion of local MSME and making it easier for users to explore various existing businesses.

Implementation of Content Serving

The results of the implementation of content presentation on all website pages are designed with user-friendly principles, ensuring easy access and intuitive navigation. Every element is optimized so that users can easily find the information they are looking for, whether on desktop or mobile, thanks to the responsive design. Content is structured in a structured manner using clear headings to differentiate each section, as well as short paragraphs that get straight to the point of information so as not to confuse users. Visual support such as images, videos, and graphics are used to enrich the user experience, provide context, and increase aesthetic appeal. All these elements combine with the primary goal of creating a pleasant, efficient and informative experience for every website visitor, ensuring that they can navigate the site easily and obtain the required information without any hassle.

5.0 CONCLUSION

Based on the results of the development carried out regarding the design of the Pengklik Tourist Attraction website, it can be concluded that this information system makes it easy for tourists to obtain information related to available tourist attractions and activities. This website was developed not only to provide information to tourists, but also to benefit local residents, especially Micro, Small and Medium Enterprises (MSME). Through the use of this website, MSME in the Pengklik area can promote their products more widely. Thus, this website not only functions as a tourism information medium, but also becomes a means of economic empowerment for local communities through the promotion of MSME products.

Furthermore, after internal development and testing, informal usability feedback was collected from several local UMKM members and community residents in Madurejo Village. They generally appreciated the simplicity of the interface and the availability of basic information. However, feedback also indicated that the current UI/UX still appears too basic, and that the website would benefit from a clearer layout, richer visual presentation, and the addition of more feature menus in the future. These inputs will be used as a reference for further development, especially to improve usability and expand functionality.

Acknowledgements

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