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Website-Based Village Information System Design (Case Study: Ujung Batu III Village)

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ABSTRACT

This research aims to design a website-based village information system in Ujung Batu III Village, Hutaraja Tinggi, Padang Lawas, North Sumatra. With the rapid development of digital technology, websites have become an important tool for increasing information access, transparency and public participation. The research method used is the waterfall model, which includes the stages of communication, planning, modeling, construction and implementation. The research results show that the village information website has succeeded in increasing community access to important information, such as village activities and government programs. In addition, training provided to village officials and community representatives improves their skills in managing content sites, thereby encouraging community empowerment. This website also functions as a promotional tool to introduce the village's potential, including tourist attractions and local products, which can attract the attention of tourists and investors. Increased communication between the village government and the community via the website creates a more open and responsive channel. With a structured system, village information management can continue in a sustainable manner, ensuring the relevance and benefits of information for future generations. This research supports the development vision of Ujung Batu III Village and contributes to the welfare of the village community.

Keywords: Website, Information, System design, Ujung Batu III, Digital technology.

INTRODUCTION

With the rapid growth of digital technology, everything in this world can change (Dolega et al., 2021)(Alisya et al., 2024). Technology has progressed over time, where the exchange of data and information that was once slow can now be done in seconds (Wayahdi & Ruziq, 2024). One of the fastest growing technologies is the website. A website is a collection of document pages that can be accessed publicly and interrelated with each other in one domain name (Wayahdi et al., 2023). Websites can be used for various purposes, such as conveying information, interacting with users, selling products or services, and serving as a platform for sharing content (Wayahdi et al., 2024) (Rahman & Hossain, 2022). By building an attractive and informative website, it will be able to increase the exposure and visibility of an organization, as well as become a complete information system to the public (Ginting et al., 2023). A good information system will facilitate decision making and operations of an organization (Fatmawati et al., 2023).

Websites play an important role as a tool to increase the visibility and reputation of an organization (Jawabreh et al., 2022) and business processes (Jadil et al., 2022), especially interactive websites (Shrotri et al., 2021)(Alexander et al., 2021). A well-structured website is important for creating a positive internet user environment (Widagdo & Roz, 2021). Websites offer many benefits to both managers and users, as they enable the digital dissemination of information that can be accessed by anyone, no matter where they are (Ruziq et al., 2023). As such, an effective website presence is key to achieving success in today's digital age, as it not only increases an

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organization's visibility and reputation, but also enables better interaction with users as well as wider accessibility of information, which in turn can drive growth and innovation in business.

The Ujung Batu III Village Government is one agency that does not ignore technological developments. Ujung Batu III Village, located in Hutaraja Tinggi Sub-district, Padang Lawas Regency, North Sumatra Province, has a vision of "The realization of a peaceful, advanced, and just community in Ujung Batu III Village." The development vision of Ujung Batu III Village reflects the desire of the village government and community to achieve better welfare in the next few years. To realize this vision, democratic, transparent, and caring government services are needed, as well as the development of healthy, intelligent, and productive human resources. In addition, environmental conservation is also very important to maintain the quality of the village's natural resources.

Based on the explanation above, the author will build an information website for Ujung Batu III Village. The purpose of this research is to help realize the spirit of Ujung Batu III Village residents as stated in the vision of the Ujung Batu III Village government. This research is important because the development of an information website will increase community participation, government transparency, and information accessibility, which supports Ujung Batu III Village's development vision and community welfare.

METHOD

This research method uses a waterfall model-based process framework approach to provide an organized structure at each stage of system development. Starting from communication, planning, modelling, construction, and deployment (Wayahdi & Ruziq, 2024). The research method can be seen in Figure 1.

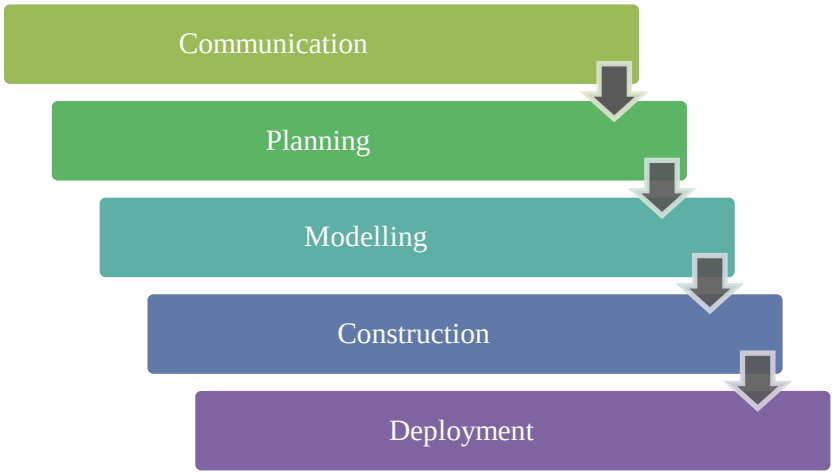

Figure 1. Research Method

Figure 1 shows the stages of the research carried out, namely:

1. **Communication**
   This communication stage is very important at the beginning of the research on the design of a web-based information system for Ujung Batu III Village because it is the basis for communicating and collaborating effectively with clients. In this stage, the development team and village representatives need to reach agreement on various aspects, such as the same perception of the information system to be built, the expected project duration, the scope of work, and the goals and expectations to be achieved by the village government and community. In addition, clear and open communication at this stage also helps identify potential challenges and risks that may arise during the system development process, so that the team can plan appropriate solutions and maintain a good relationship with the client throughout the project. Thus, this communication stage is crucial to ensure that the design of the web-based information system can meet the needs and expectations of Ujung Batu III Village.

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2. **Planning**
In the planning stage of designing a website-based information system in Ujung Batu III Village, it is important to plan the project in a structured way. This includes defining technical tasks such as user interface development and database management, as well as analyzing risks that may arise. In addition, allocating the necessary resources, both human and device, must be done to support the development. Developing a realistic work schedule is also crucial to ensure each stage of the project is completed on time. With careful planning, the design of a web-based information system for Ujung Batu III Village can run more efficiently and effectively, improving information services for the village community.

3. **Modelling**
The next stage in this research is modeling. In this stage, the development team will analyze and document the functional and non-functional requirements of the system, including the features desired by the village government and the community, as well as how the system will operate in the local context. The modeling process also includes the creation of flowcharts, data models, and user interface prototypes that will help in visualizing the system design. By thoroughly understanding the requirements, the team can design appropriate and effective solutions, ensuring that the information system built not only meets current needs, but can also adapt to future developments.

4. **Construction**
The construction stage in this research includes coding to build a web-based information system application specifically designed for Ujung Batu III Village. At this stage, the development team will translate the previously created design into executable code, using the appropriate programming language and technology to meet the needs of the system. Once the coding process is complete, the next step is to conduct testing to ensure that the application functions properly and meets all the requirements that have been set. This testing consists of several stages, including:
   a. Unit Testing: Testing each component or module separately to ensure that each functions as expected.
   b. Integration Testing: Testing the interaction between different modules to ensure that they can work well together in a larger system.
   c. System Testing: Testing the entire system to ensure that all features function properly in the context of the application as a whole.
   d. User Acceptance Testing (UAT): Involves end users, in this case the community and village government, to test the system and provide feedback on the functionality and usability of the application.

5. **Deployment**
The last stage in this research is Deployment, which is the process of handing over the web-based information system application that has been developed to customers, in this case the government and community of Ujung Batu III Village. At this stage, the application will be officially published, so that it can be accessed by the intended users. In addition, it is important to provide comprehensive supporting documentation, which includes:
   a. System Flow: A diagram that describes the processes and interactions within the system, so that users can understand how the system operates.
   b. Table Relationships: A description of the database structure, including the relationships between tables used in the system, to assist in maintenance and future development.
   c. User Manual: A complete guide that explains how to use the application, including steps to access available features, so that users can make the most of the system.

   In addition, system training will also be provided to users, including village government staff and communities, to ensure that they understand how to use the application effectively. This training can be conducted through face-to-face sessions or workshops, where users can directly

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interact with the system and get answers to any questions they may have.

RESULT AND DISCUSSION

Figure 1 is the main page of the website, where there are several main menus such as Village Profile, Village Information, Statistical Data, UMKM Products, Contact, and Make a Complaint. There is also a search field to obtain the information that users need. There are also several cards that make it easy for users to access Gallery, News, Complaints, Products, Documents, Announcements, Help, and Maps.

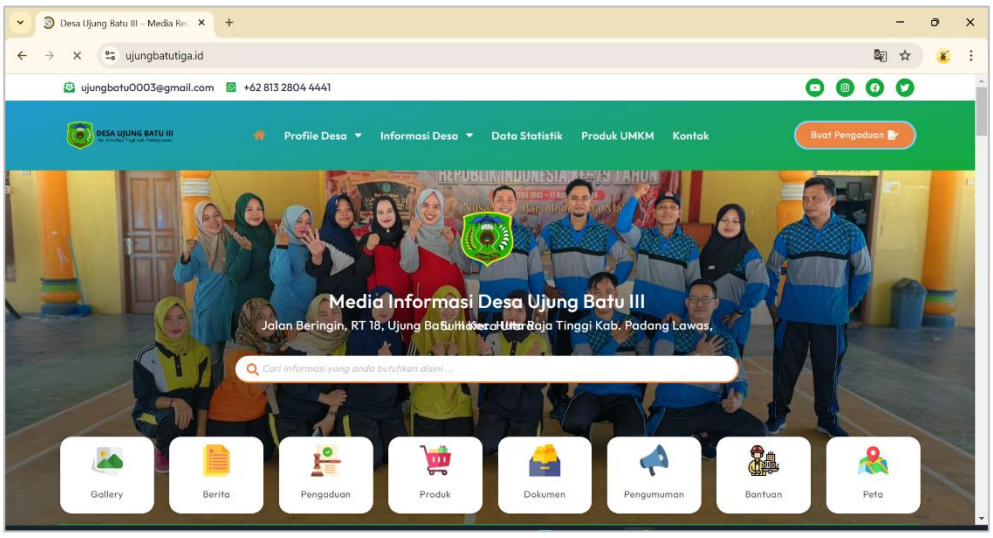

Figure 1. Website main page

Figure 2 displays the complaint form used by the community of Ujung Batu III Village to submit aspirations, complaints, or feedback to the village government. The form is designed with a simple and intuitive interface, making it easy for users to fill in the required information. In the form, there are several columns that must be filled in, including NIK (Population Identification Number), full name, email address, telephone number, and complaint content. With this form, the community can easily communicate their problems or suggestions directly to the village, creating a more open and responsive communication channel.

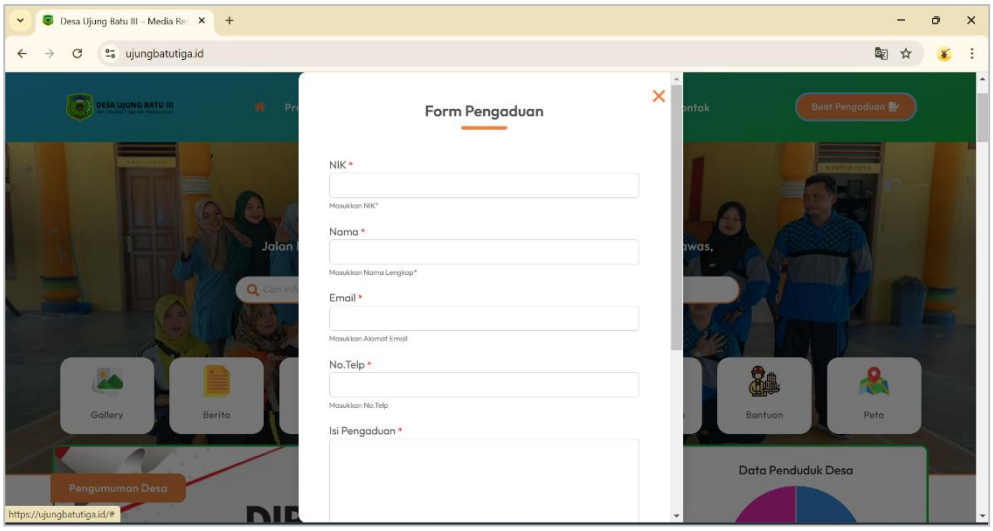

Figure 2. Complaint form page

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Figure 3 shows the vision page of Ujung Batu III Village. In the main section, there is a description of the village's vision, which emphasizes the importance of building a peaceful, developed, and equitable community. The text explains the goal to improve community welfare in the next six years through good governance and sustainable services.

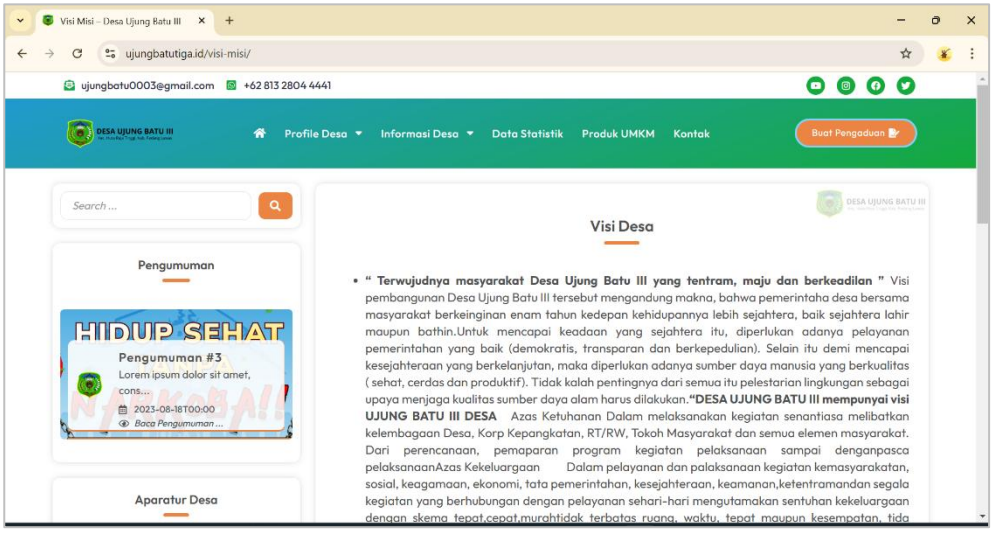

Figure 3. Village vision page

Figure 4 displays a page containing the latest news about Ujung Batu III Village, such as news featuring collaboration between village officials and related agencies, news of community work together activities, village development, and so on. This page is designed to provide up-to-date information to the community, so that they can stay involved and participate in various activities that take place in the village.

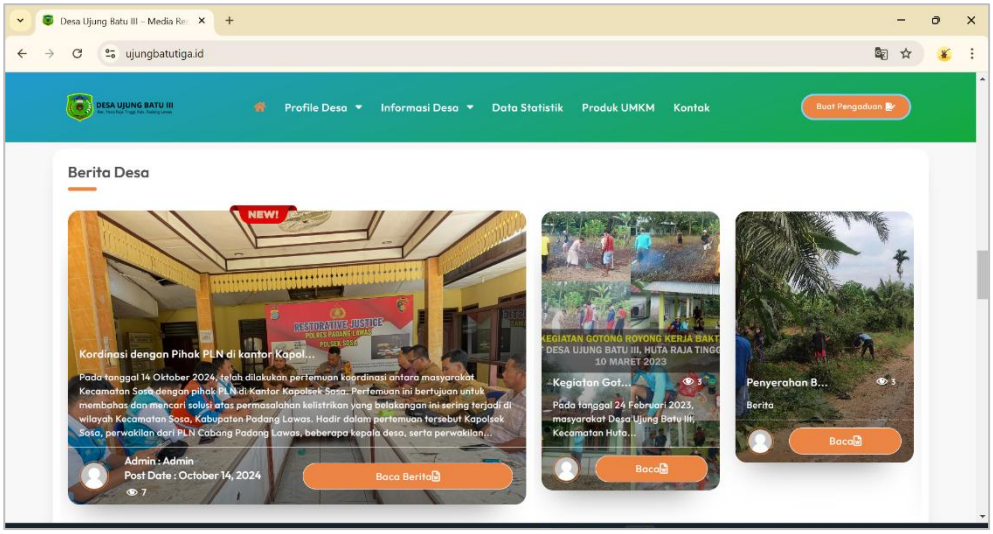

Figure 4. Village news page

The research conducted under the title Website-Based Village Information System Design in Ujung Batu III Village resulted in findings that had a positive impact. The following are some important things obtained from this research:

1. **Improved Access to Information**: The research successfully improved access to information for the community of Ujung Batu III Village through the website, allowing residents to easily access important information about village activities, government programs, and local news at any time. This encourages transparency and active community participation in village development.
2. **Community Empowerment**: This research also focuses on community empowerment through training for village officials and community representatives, improving their skills in managing and updating website content. This empowerment is expected to increase community confidence in utilizing information technology.
3. **Promotion of Village Potential**: The website serves as a promotional tool to introduce the potential of Ujung Batu III Village, showcasing tourist attractions, local products, and culture. This information can attract tourists and investors, potentially improving the village economy.
4. **Improved Communication**: The website improves communication between the village government and its citizens, allowing the community to convey aspirations and suggestions directly. This creates an open and responsive communication channel, strengthening the relationship between the government and the community.
5. **Sustainable Development**: Village information websites ensure the sustainability of information management in the future. With a structured system, the village can continuously update the information and perform ongoing maintenance, allowing the village to maintain the information in the future.

CONCLUSION

Research on Website-Based Village Information System Design in Ujung Batu III Village shows significant results and has a positive impact on the village community. The development of information websites has increased access to important information, encouraged transparency and active community participation in development. Training for village officials and community representatives empowers them to manage website content, while the website also functions as a promotional tool to attract tourists and investors. Increasing communication between the village government and the community through more open channels strengthens the relationship between the two parties. With a structured system, information management can continue in a sustainable manner, supporting the vision of development and welfare of the people of Ujung Batu III Village.

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