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Design of Information System for TegalSiwalan Village Profile

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ABSTRACT

The dissemination of information in Tegalsiwalan Village is still conducted manually, making it difficult for the community to access information regarding the village profile, village activities, and administrative services. This study aims to design a village profile website information system for Tegalsiwalan Village that can assist the village government in delivering information to the community more effectively and efficiently. The research employed a qualitative method with data collection techniques consisting of observation, interviews, and literature review. The system development method used was the Waterfall method, focusing on the requirements analysis and system design stages. The results of this study produced a website-based village profile information system design that provides features such as village profile information, village activity information, activity documentation, and a feedback and suggestion feature as a communication medium between the community and the village government. Based on the results of the initial validation through interviews with village officials, the proposed system design was considered to be in accordance with both information dissemination needs and user requirements. The designed system is expected to improve the quality of village information services by making them faster, more structured, and more accessible to the community.

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1. INTRODUCTION

A village is a legal community unit that has the authority to independently regulate and manage government affairs and the interests of the local community. Village governments play a crucial role as providers of public services that directly impact the community.[1]Tegalsiwalan Village is one of the villages in Tegalsiwalan District, Probolinggo Regency. This village has diverse potential, both in natural resources and the local economy, which needs to be introduced to the wider community. However, dissemination of information regarding the village profile, village activities, and administrative services is still done manually, thus reducing public access to information.[1].

The limitations of information media mean that the information delivery process has not been running effectively and has not been able to reach all of society equally.[2]Information regarding village profiles, development programs, village activities, and administrative services should be accessible quickly, easily, and transparently.[3]In reality, people still have to come directly to the village office to obtain the information they need. This situation highlights the need for an information medium that can support village governments in conveying information more effectively and efficiently to the public.

The development of information technology and the internet has made various aspects of life easier, including village governance. The use of information technology can improve the quality of public services, work efficiency, and information transparency to the public.[4],[5]One form of information technology

utilization is the use of websites as a medium for conveying information. Websites allow information to be published and accessed anytime and from anywhere by the public. In addition to increasing ease of access to information, websites can also support government transparency and introduce village potential to the wider community.[6],[7].

Extensive research has been conducted on website-based village information systems. Research by Jimi Asmara shows that website-based village information systems can improve information services to the public by allowing faster and easier access.[8]Research conducted by Kusuma Wardhani Mas'udah explains that village profile websites can be used as information centers containing village profiles, tourism potential, and MSMEs, thereby supporting wider information dissemination.[9]Another study conducted by Santi et al. showed that a website-based village profile information system can support the presentation of village information in a structured manner and facilitate information access for the public.[10]In addition, research by N. Akbar states that web-based information systems are more effective in delivering information than conventional methods which still use bulletin boards.[2].

Based on previous studies, village websites are generally used as a medium for disseminating information and publishing village profiles. However, most existing studies have primarily focused on presenting village profile information, village news, and the publication of village activities without providing a two-way communication channel between the community and the village government. The novelty of this study lies in the system design process, which was developed based on the results of direct observations and interviews with officials of Tegalsiwalan Village, ensuring that the proposed system is tailored to user needs. In addition to providing village profile information and information on village activities, the designed system is equipped with a feedback and suggestion feature that serves as a communication medium between the community and the village government. This feature allows the community to submit input more easily through web-based media, thus enabling more effective communication.[11].Thus, the website not only functions as an information medium, but also as a means of interaction that can support improving the quality of village information services.

This research uses the Waterfall system development method because it has structured and systematic stages in the process of needs analysis and system design.[12]. The system design was carried out using use case diagrams, activity diagrams, class diagrams, and user interface (UI/UX) design. The purpose of this research is to design an information system for the Tegalsiwalan Village profile website that can help the village government convey information more effectively, in a structured manner, and easily accessible to the public.

2. METHOD

2.1 Research Stages

The research stages were carried out to obtain the data and information needed to design the information system for the Tegalsiwalan Village profile website. This research was conducted systematically, starting from problem identification to the preparation of the research report. The research stages used can be seen in Figure 1.

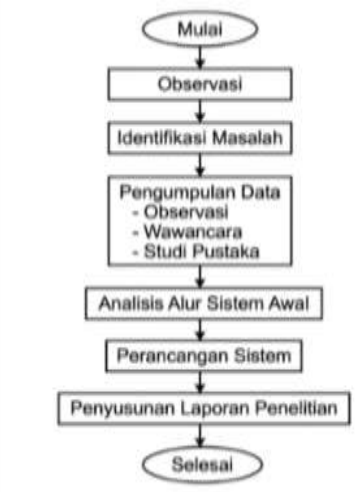


Figure 1. Research Stages

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2.2 Data collection technique

Data collection techniques were used to obtain accurate information regarding system needs and conditions in Tegalsiwalan Village. The techniques used in this research included observation, interviews, and literature review.

a. Observation

Direct observations were conducted at the Tegalsiwalan Village Office to assess the ongoing information delivery and administrative services process. Through these observations, researchers were able to identify various obstacles encountered in disseminating information to the public.

b. Interview

Interviews were conducted with the Tegalsiwalan Village Secretary, who is involved in village information management. The interviews aimed to obtain information regarding system requirements, challenges encountered in information delivery, and features required for the village profile website. The interview results were used as the basis for the system requirements analysis process.

c. Literature Study

A literature review was conducted by examining various reference sources related to website-based information systems, village profile websites, system development methods, and previous research relevant to the research topic. References were obtained from scientific journals, books, proceedings, and other sources. Most of the references used were published within the last five years to obtain information relevant to current technological developments.

2.3 System Development Methods

The system development method used in this research is the Waterfall method. The Waterfall method was chosen because it has systematic and structured stages, thus facilitating the system development process. Each stage is carried out sequentially and forms the basis for the next stage [10],[13]. The stages of the Waterfall method used in this research include:

a. Needs Analysis

The needs analysis phase is conducted to identify system requirements based on observations and interviews. This phase analyzes user needs, including information on village profiles, village news, activity galleries, village potential, and the feedback and suggestions services that will be provided within the system.

b. System Design

The system design phase begins after the requirements analysis process is complete. At this stage, a system design is created using the Unified Modeling Language (UML) approach, consisting of use case diagrams, activity diagrams, and class diagrams. Additionally, the user interface (UI/UX) is designed to illustrate the appearance of the system to be built.

c. Implementation of the Design

The implementation phase involves applying the analysis and design results to a village profile website system design. Implementation in this research focused on developing a system design and interface that meet user needs.

d. Testing

The testing phase is conducted to ensure that the system design meets user needs. Testing is conducted by evaluating the system's functions and design to determine its suitability to the needs obtained through observations and interviews.

2.4 System Requirements Analysis

A system requirements analysis was conducted based on observations and interviews conducted in Tegalsiwalan Village. This stage aimed to determine user needs, which would form the basis for designing the village profile website information system.

a. Admin Needs

The admin is responsible for managing all the information available on the website. The admin requirements for the system being designed include:

1. Managing village profile data.
2. Manage village news and activity information.
3. Manage the village activity documentation gallery.
4. Managing village potential information.
5. Manage contact data and village service information.
6. View and manage criticism and suggestions sent by the public.

b. Community Needs

The community is a user who utilizes the website to obtain village information. The community's needs for the designed system include:

1. Access Tegalsiwalan Village profile information.

2. View village news and activities.
3. View the gallery of documentation of village activities.
4. Accessing village potential information.
5. Get information on village services and contacts.
6. Send criticism and suggestions to the village government via the website.

3. RESULTS AND DISCUSSION

3.1 Running System Analysis

Based on the existing business process diagram, the flow of information delivery in Tegalsiwalan Village is still carried out manually and involves several parties, namely the Village Head, Secretary, and the community. The process begins with the Village Head holding a meeting to discuss information or activities to be conveyed to the community. After that, the Village Head compiles the information to be conveyed. The compiled information is then forwarded to the Secretary for further processing. The Secretary is responsible for compiling the information media to be used, such as circulars or announcements. Next, the Secretary disseminates information to the community through various means, including loudspeakers, circulars, bulletin boards, community meetings, and through community leaders. The community then receives information through these media until the information delivery process is complete. However, this process still has several weaknesses, such as delays in information delivery, limited reach, and reliance on face-to-face meetings, so that not all residents receive information equally. The current system can be seen in Figure 2.

3.2 Interview Results and Needs Analysis



Figure 2. Running system

Based on interviews with the Tegalsiwalan Village Secretary, it was discovered that information dissemination to the public is still carried out manually through bulletin boards, circulars, and direct delivery at specific events. This method is considered quite helpful, but still presents several challenges, particularly in reaching the entire community quickly and evenly. Furthermore, residents often come directly to the village office to obtain information about village activities, village profiles, and other administrative information. This situation makes the information dissemination process less efficient because information cannot be accessed independently by the community.

Based on the interview results, several system requirements were identified for the village, including the availability of online information media, a more structured presentation of village profile information, publication of village activities and documentation, and a facility for the community to submit criticism and suggestions to the village government. These requirements were then used as the basis for designing the Tegalsiwalan Village profile website information system. The system is expected to assist the village government in delivering information more quickly, in a structured manner, and in a more accessible manner to the community.

3.3 Proposed System

The proposal system business process is a flow of activities designed to improve the effectiveness of delivering village information through the website. This system involves several actors: the Village Head, Secretary, Admin, System, and Community. This system makes the information delivery process more structured, faster, and more accessible to the public. The proposal system business process is described as follows:

1. Information Compilation Process

The process begins with the Village Head holding a meeting to discuss various activities and information to be disseminated to the community. The results of this meeting are then used as the basis for determining the information to be published. The selected information is then submitted to the Secretary to be compiled and

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typed into a more structured information document. The Secretary then groups the information into categories, such as news, announcements, and village activities, to ensure a more organized and understandable presentation.

2. Information Processing Process by Admin

The information compiled by the Secretary is then submitted to the Admin for further processing through the system. The Admin first logs in to the system to access the data management page. Once successfully logged in, the Admin enters the information into the system according to the documents compiled. Additionally, the Admin uploads images or documentation to support the information displayed.

3. Data Verification and Storage Process

Data entered by the Admin will then undergo a system verification process. This process ensures that the entered data is complete and accurate. If the entered data is invalid, the system will return the process to the Admin for correction. However, if the data is deemed valid, the system will save it to the database. Once saved, the system will display the information on the village website for public access.

4. Public Information Access Process

The public can access information by visiting the village website using their devices. Information published by the system will be displayed so they can view various village-related information, such as news, announcements, and activities.

5. Criticism and Suggestion Process

In addition to accessing information, the public can also provide criticism and suggestions through the features available on the website. The public can fill out the criticism and suggestions form provided by the system. The data entered by the public will then be verified by the system. If the data is invalid, the public will be asked to correct it. However, if the data is deemed valid, the system will save the criticism and suggestions to the database for further action by the village.

6. Final Process

After the entire process is completed, both in delivering information and managing criticism and suggestions, the business process of the proposal system is declared complete.

3.4 Use Case Diagram

Use case diagrams are used to describe the interactions between users and the proposed system.[14]This diagram shows the main functions of the system and the relationships between actors within the system. In the proposed village profile website information system, there are two main actors: the admin and the community. The admin acts as the system manager, tasked with inputting and managing village information. Meanwhile, the community acts as the user who accesses the information available on the website. The admin has several functions, namely logging in, managing village information, and uploading documentation. Meanwhile, the community can view the displayed village information and provide criticism and suggestions through the available features. The use case diagram can be seen in Figure 3.

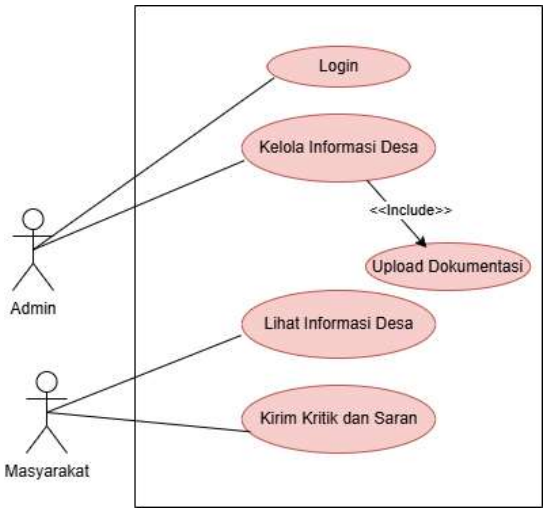


Figure 3. Use Case Diagram

3.5 Activity Diagram

Activity diagrams are used to describe the flow of activities that occur in a system.[15], the following are activities after the system is in place.

1. Login Activity Diagram

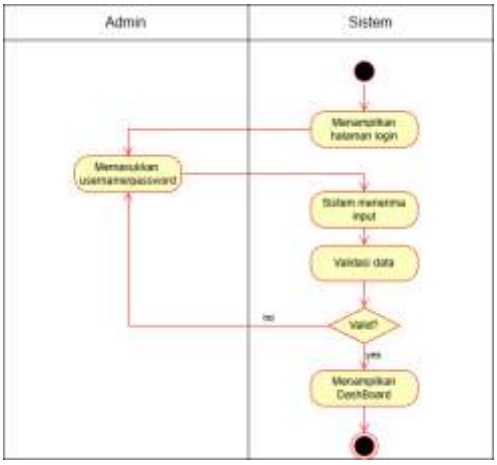


Figure 4. Activity Diagram Login

2. Village Information Management Activity Diagram

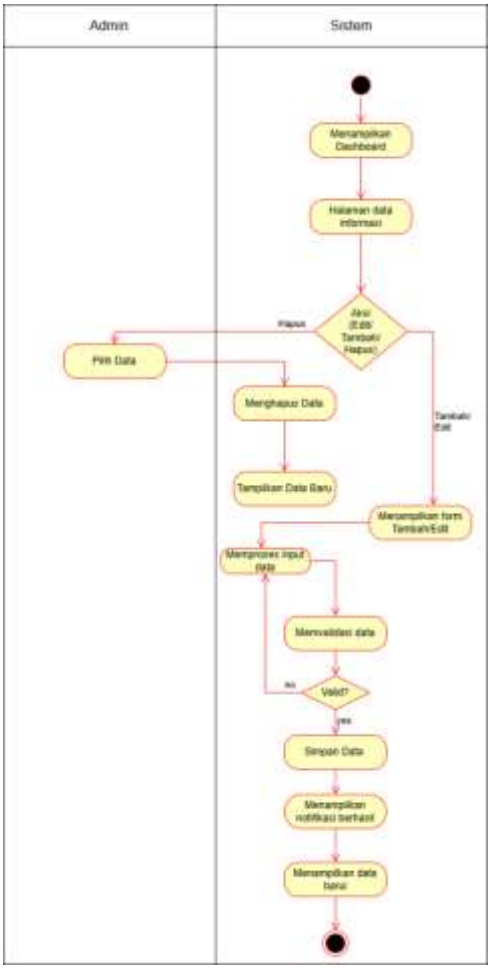


Figure 5. Activity Diagram for Village

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3. Activity Diagram View Village Information

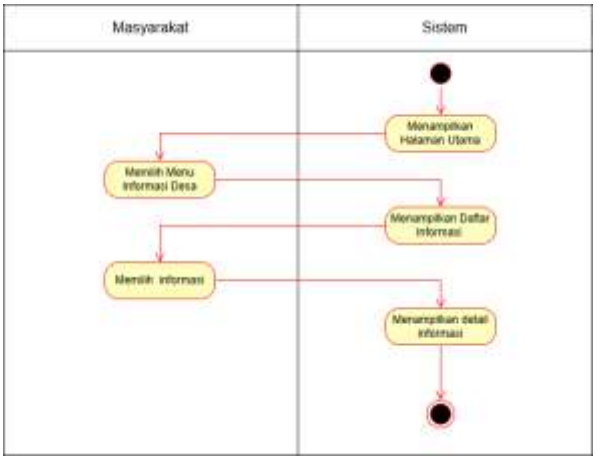


Figure 6. Activity Diagram View Village

4. Activity Diagram Criticism and Suggestions

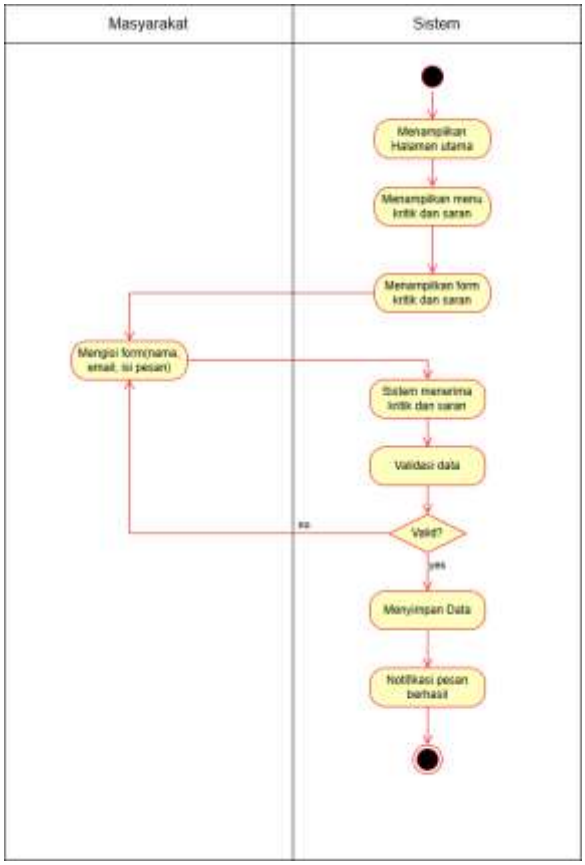


Figure 7. Activity Diagram of Criticism and

3.6 Class Diagram

Class diagrams are used to describe the class structure and relationships between classes in a system.[16]. The proposed class diagram can be seen in Figure 8.

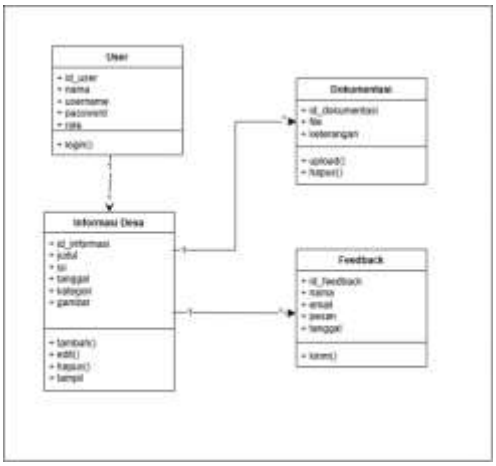


Figure 8. Class Diagram

3.7 UI/UX Interface Design

User interface (UI/UX) design is carried out to produce a system display that is easy to use, attractive, and meets user needs.[17],[18].

1. Login



Figure 9. Login

2. Admin Dashboard

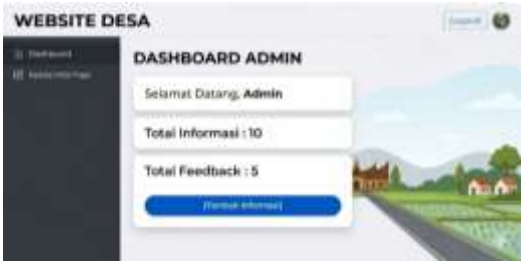


Figure 10. Admin Dashboard

3. Manage Village Information



Figure 11. Manage Village

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4. Add/Edit Information Form



Figure 12. Add/Edit information form

5. Home for the Community



Figure 13. Home for the Community

6. Village Information Details for the Community



Figure 15. Village Information Details for the

7. Criticism and suggestions



Figure 16. Criticism and Suggestions

3.8 Initial Design Validation

An initial design validation was conducted to assess whether the proposed system met user requirements. The validation process was carried out through an interview with the Secretary of Tegalsiwalan Village after the system design had been completed. The results of the initial validation are presented in Table I.

Tabel 1. Initial Design Validation Results

No	Aspek yang Divalidasi	Hasil Wawancara
1	Kesesuaian fitur profil desa	Sesuai dengan kebutuhan desa
2	Kesesuaian fitur berita desa	Sesuai dengan kebutuhan penyampaian informasi
3	Kesesuaian fitur dokumentasi kegiatan	Memudahkan publikasi kegiatan desa
4	Kesesuaian fitur kritik dan saran	Mendukung komunikasi masyarakat dan pemerintah desa
5	Kemudahan antarmuka pengguna	Mudah dipahami dan digunakan

Based on the interview findings presented in Table I, the village representative stated that the proposed features were aligned with the information dissemination needs of Tegalsiwalan Village. The village profile, news, activity documentation, and feedback features were considered useful in supporting the village government in delivering information to the community more effectively. In addition, the user interface design was regarded as simple and easy to understand. The village representative also indicated that the feedback feature could serve as a communication channel between the community and the village government, enabling residents to provide suggestions and input more conveniently. Overall, the validation results indicate that the proposed system design has accommodated the needs for village profile information dissemination, publication of village activities, activity documentation, and communication between the community and the village government through the feedback feature. Therefore, the proposed design can serve as a foundation for the next stage of system development.

3.9 Discussion

Based on the design results, the Tegalsiwalan Village profile website information system was designed to address the problem of delivering information, which was previously done manually through bulletin boards and direct delivery to the community. Through the designed system, information regarding the village profile, village activities, announcements, and documentation can be accessed by the community more easily and quickly through the website. Utilizing the website as an information medium can also increase the effectiveness of information delivery to the community because information can be accessed anytime and from anywhere.[19]In addition to serving as an information medium, the system also provides a critique and suggestion feature that allows the public to provide input to the village government. This feature is expected to improve communication between the public and the village government, making the information delivery process more effective and interactive.

The results of this study are in line with research conducted by Jimi Asmara [9] who stated that village websites can help increase the effectiveness of information delivery to the community. This study also supports the results of research by Kusuma Wardhani Mas'udah [7] who showed that village profile websites can be used as a medium for publishing information and village potential more widely. In addition, research by N. Akbar [2] explains that web-based information systems can increase the effectiveness of information dissemination compared to manual methods.

Although it has the same objectives as previous research, this research has differences in the design process which is adapted to the needs of Tegalsiwalan Village based on the results of observations and interviews, in contrast to the village portal research which focuses on the OpenSID approach and the Kano method.[20]. Furthermore, the system is equipped with a criticism and suggestion feature that serves as a communication medium between the community and the village government, making the website not only an information medium but also a means of interaction for users.

4. Conclusion

Based Based on the results of this study, a website-based village profile information system for Tegalsiwalan Village was designed to support the village government in delivering information to the community more effectively and efficiently. The system design was developed based on the findings obtained

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through observations, interviews, and literature review, ensuring that it aligns with user requirements. The proposed system provides features for village profile information, activity documentation, village news, and a feedback feature that serves as a communication medium between the community and the village government.

The initial validation results indicate that the proposed system design has addressed the needs for disseminating village profile information, publishing village news and activities, documenting village activities, and facilitating communication between the community and the village government through the feedback feature. The availability of a village profile website is expected to enable information to be accessed more quickly, systematically, and conveniently by the public. In addition, the website can be utilized as a platform for promoting village potential and supporting the improvement of information services through the use of information technology.

Future studies may further develop the proposed design into a fully implemented system and conduct direct testing to ensure that the website can be utilized optimally by both the village government and the community.

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