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Design of a Web-Based Citizen Complaint System in Increasing Citizen Participation in the Village Development Process

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Abstract

Jekulo Village faces challenges in managing citizen complaints and grievances due to limited physical infrastructure and time. The conventional complaint mechanism is often ineffective in accommodating citizen aspirations in a transparent and responsive manner. The manual complaint recording and resolution process also causes complaint handling to be slow and less organized. This paper aims to discuss the importance of implementing a web-based citizen complaint system to increase community participation in village development. This system is designed so that residents can submit complaints, grievances, and suggestions more easily and efficiently, while also allowing the village government to respond to complaints more quickly and accurately. With a technology-based system, communication between residents and the village government can run more transparently, and increase accountability in handling complaints. The results of the development of a web-based citizen complaint system in Jekulo Village show increased efficiency in handling public complaints. This system accelerates the process of receiving, verifying, and resolving citizen complaints, so that problems can be handled more quickly and accurately. In addition, transparency in resolving complaints increases, which has an impact on increasing citizen trust in the village government. With the real-time complaint status monitoring feature, residents feel more involved in the village development process. The system also provides data that can be analyzed to identify patterns of problems that often occur, so that village governments can take preventive steps to resolve recurring issues. Overall, the system is an effective tool in strengthening community participation and building villages that are more inclusive and responsive to the needs of their citizens.

Introduction

In the digital era, websites have become an important element in many areas of life, including village regulations. Advances in information technology allow simpler, faster and more efficient access to various services (Setyowati et al., 2021; Amini & Jahanbakhsh Javid, 2023; George & George, 2023). In the context of village regulations, a web-based system can help overcome infrastructure limitations and expand the scope of city services (Pambudi et al., 2024). As one of the development villages, Jekulo village is a challenge in improving the efficiency and effectiveness of management and citizen participation in village development. The manual service system often causes delays, recording errors and lack of transparency in village management (Ginting et al., 2023; Sakir & Almahdali, 2025; Sukri et al., 2024; Manik et al., 2025; Ponto & Waisapy, 2025; Farizi et al., 2025; Siahaan et al., 2025).

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One of the main problems in Jekulo Village is the system of recording complaints and grievances from residents which is still done manually. This process increases various obstacles, including lost or unzipped documents, delays in responding to complaints, and lack of transparency in resolving problems. As a result, citizen trust in government services has decreased, and innovative solutions are needed to increase transparency and efficiency in treating symptoms. Kuncoro et al. (2022) By using web-based technology, the complaint system can provide access to residents, file complaints, and respond faster and more accurately.

Therefore, the development of a web-based complaint system for Jekulo Village is a strategic step to increase local government participation in village development. This system aims to promote citizens when filing complaints online, while at the same time increasing transparency in treating symptoms (Vian et al., 2012; Creel, 2020). By using the waterfall method in development, this system is equipped with key features such as online complaints, complaint monitoring and direct communication with village officials. The implementation of this system is expected to strengthen village regulations and cooperation with local governments, provide solutions to various village problems and increase citizen trust in increasingly fast services (Firman et al., 2024; Fjeldstad & Heggstad, 2012; Sofyani et al., 2022; Sabet & Khaksar, 2024).

There are several previous studies related to web-based payroll systems as follows:

From the research entitled "DESIGN OF JATIMULO VILLAGE SERVICE SYSTEM BASED ON WEBSITE WITH PROTOTYPE METHOD". The research method used is the Prototyping method, which allows continuous iteration through collaboration between users and analysts. This method ensures that the system can be adjusted to emerging needs quickly and effectively. The application prototype was developed using Figma with a simple design and eye-friendly colors, making it easy to use and attractive to users. The development results show an intuitive interface and relevant features to increase community participation and the effectiveness of village management.

Similar research entitled "Android-Based Criticism and Suggestion Complaint System (SiPetikan) in Kelambir V Kebon Village" was also conducted by Putri & Putra (2023). They developed this system using PHP and Gammu, allowing the public to send reports through the application. The reports received will be processed by the system and displayed on the website, so that they can be monitored and verified by the village. After verification, information related to the report will be conveyed back to the public.

The research entitled "Prototype Design of Public Complaints Services Through Android-Based Village Offices" was conducted by Yurindra et al. (2021), the design of this complaint service application is based on Android with a prototype model and MySQL as a database. This application allows the public to submit complaints online, and helps village and district governments in documenting and evaluating complaint services more effectively.

Furthermore, the research entitled "Digitalization of Public Services in Palewai Village with Village Information Systems" by Bantun et al. (2021)This study aims to design and develop a web-based Village Information System at the Palewai Village Office, which functions to manage population data, facilitate cover letter making services, and disseminate population data and the latest information to the community.

The results of this study are in the form of a web-based village information system that is able to manage population data more efficiently and effectively, and allows fast and easy access for the community to obtain information related to services available at the Palewai Village Office.

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From Shaniapuri et al. (2020) with his research "Implementation of Village Websites to Optimize Cover Letter Services and Criticism Suggestions for the Kiringan Village Community" This study applies the waterfall method which includes the stages of analysis, system design, implementation, and testing. The results of this study include two categories of users, namely User and Admin. In the testing stage, the method used is blackbox testing. Based on the results of the tests that have been carried out, it was concluded that the features on the website are in accordance with the needs and easy to use.

Methods

This research method uses a qualitative method with observation data collection techniques, interviews, and data collection. The stages of data collection techniques are as follows:

Interviews and Observations

Interviews are one of the important data collection techniques in designing a citizen complaint system in Jekulo Village. In this project, interviews were conducted with villagers, village officials, and local community leaders to gain a deep understanding of the problems often faced by residents, the existing complaint process, and their expectations for a more effective and responsive complaint system. This information will help design a system that is relevant and in accordance with the needs of Jekulo Village residents.

Data collection

Collecting data is a crucial stage in system design, especially to ensure that all information required by the citizen complaint system in Jekulo Village is available completely and accurately. This process involves collecting data on the types of complaints commonly submitted by residents, the current complaint flow, response and handling time, and obstacles faced by village officials in handling complaints. This data will be the basis for designing a system that can meet the needs of residents more effectively, providing features that support transparency, ease of access, and fast response to complaints in Jekulo Village.

System Development Methods

The method used in the design and development of this website is the Waterfall method, which is one of the approaches in the Software Development Life Cycle (SDLC) (Kuncoro et al., 2022). Waterfall is a method commonly used in software development with a systematic and sequential approach. The process consists of several stages, starting from needs analysis, then design, coding, testing, to support or maintenance. The following are the stages in the Waterfall method:

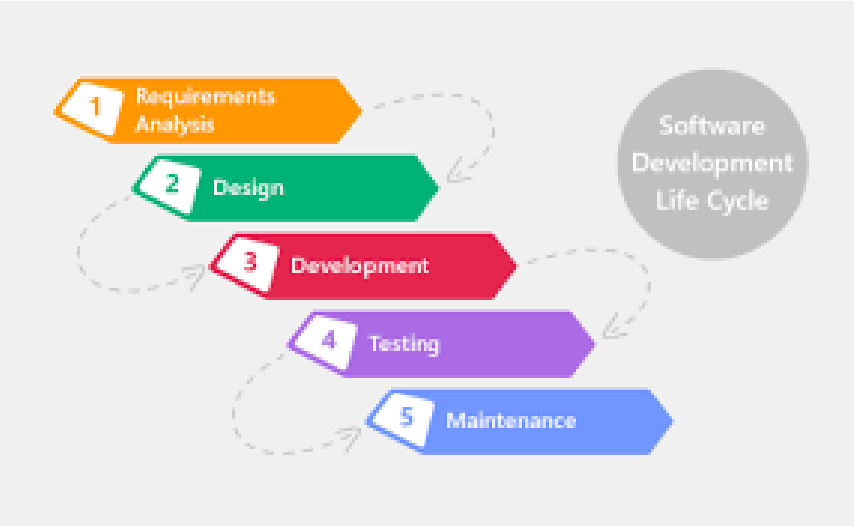

Figure 1. SDLC Stages in Software Development

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Needs analysis

This stage aims to identify the problems faced by residents in conveying their complaints and aspirations. The main focus is to understand the need for a complaint system that allows residents to convey input more easily. This system is designed as a web-based application to facilitate residents of Jekulo Village in submitting reports or complaints online regarding various issues, such as infrastructure, public services, cleanliness, and security. With a user-friendly and easily accessible interface, it is hoped that residents will be more active in conveying problems and providing input for village improvement.

Design

This stage includes the creation of a database structure, Entity Relationship diagram (ERD), data flow diagram (DFD), and the design of the citizen complaint website interface. The interface design is made with a focus on ease of use, including the provision of complaint forms, complaint categories, and report status tracking features.

Flow chart

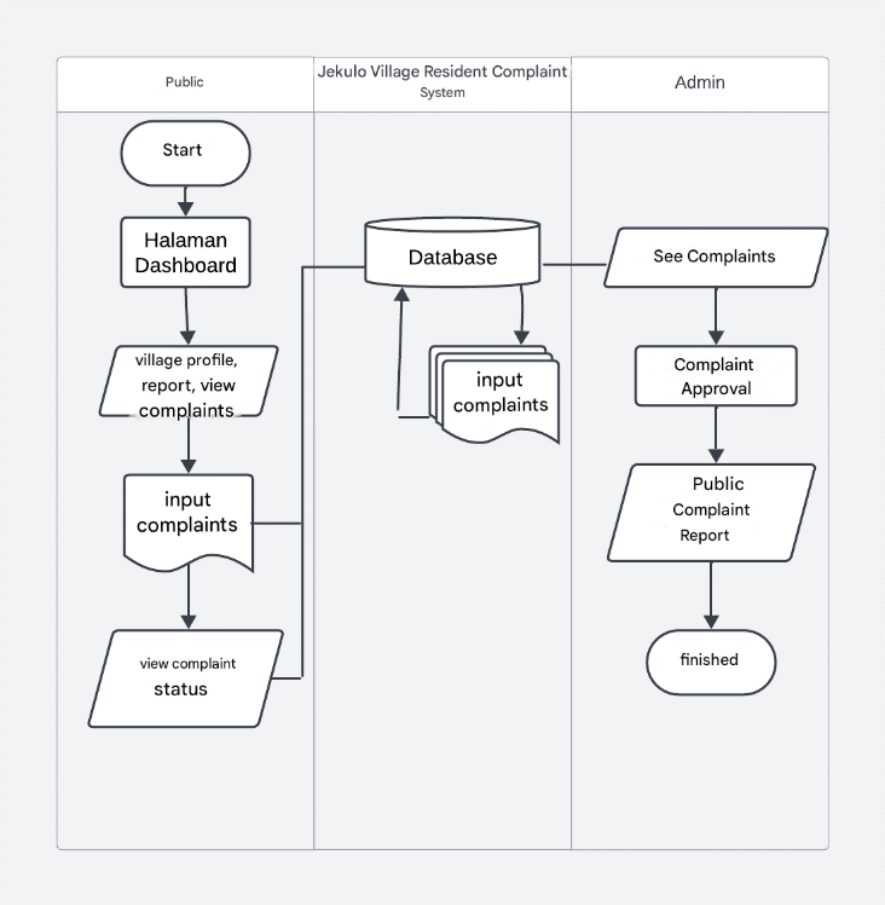

Figure 2. Jekulo Village Resident Complaint System Flowchart

Data Flow Diagram Level 0 Design

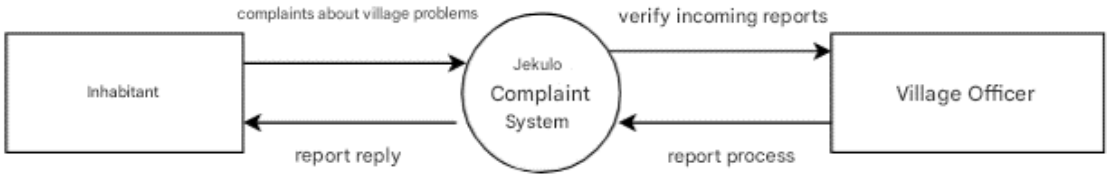

Figure 3. Citizen Complaints System Process Flow in Jekulo Village

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Entity Reality Diagram Design

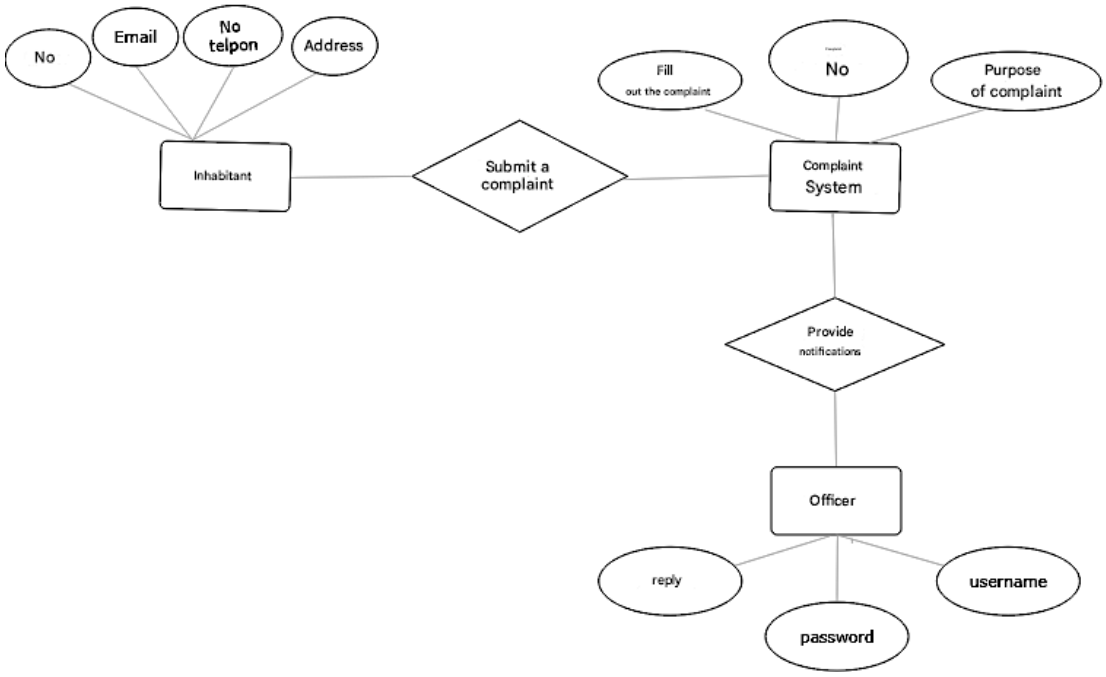

Figure 4. Data Structure and Process in Citizen Complaint System

Code Writing Implementation

At this stage, the system design is implemented into program code (Sumarno & Mubarok, 2021). The main features that have been designed, such as complaint forms, category selection, and complaint history, are developed through programming to form the core functionality of the system.

Testing

This stage is carried out to ensure that all features in the complaint system are functioning properly. The testing process includes the operation of the system as a whole, verification of the function of each feature, and identification and correction of errors in the code. This testing aims to ensure that the complaint reporting and tracking process runs as expected.

Evaluation and Maintenance

After the system is operational, a maintenance phase is carried out to ensure that the website remains stable and functions properly. This maintenance includes monitoring system performance and routine repairs, so that the website can continue to be used by residents and support their participation in village development in the long term.

Results and Discussion

This study develops a software-based system entitled "Jekulo Village Community Complaint System". This study aims to make it easier for residents to convey problems to the village more effectively and transparently. This system includes key features such as filing complaint reports, tracking complaint status, and responses from related parties. With this system, it is expected to increase efficiency in handling community problems and accelerate the complaint resolution process. In developing this system, the author uses the PHP Native language.

In the system implementation stage, the steps taken are coding using Visual Studio Code software as a code editor and using the PHP Native language.

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Coding

Coding will change the system design prepared in a computer language that can then be executed. Coding is done using PHP Native

System application page

The following image is the initial display of the application that can be seen by the public without having to log in.

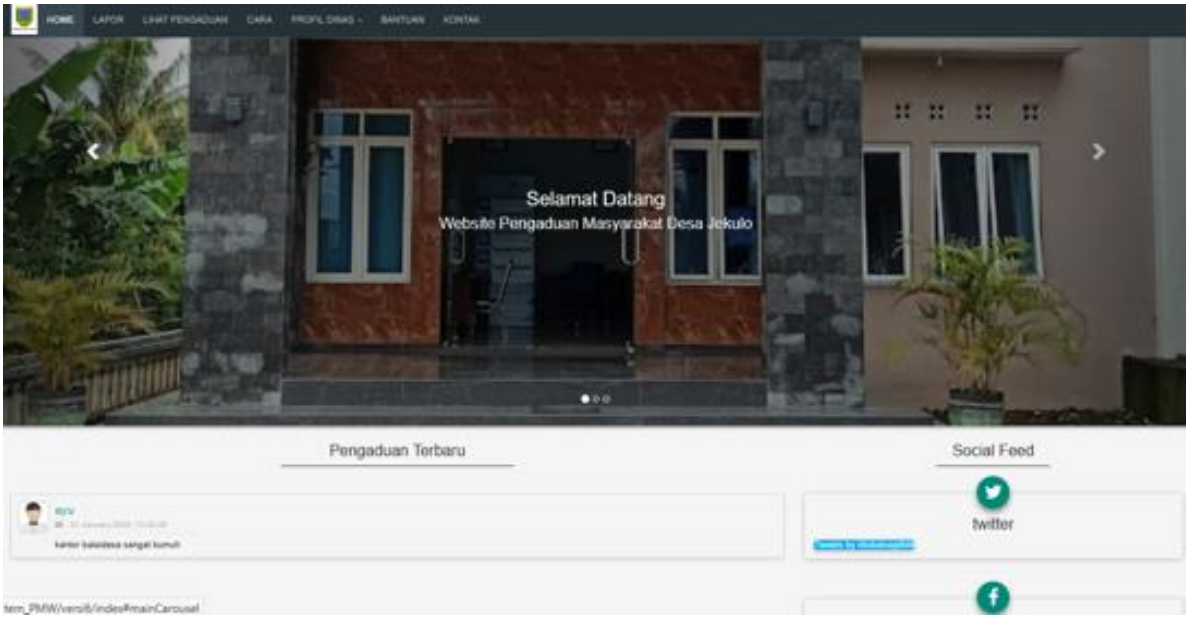

Figure 1. Log in

The following image is the dashboard page for the "Report" section which contains a complaint form that the public will use to fill in their complaints.

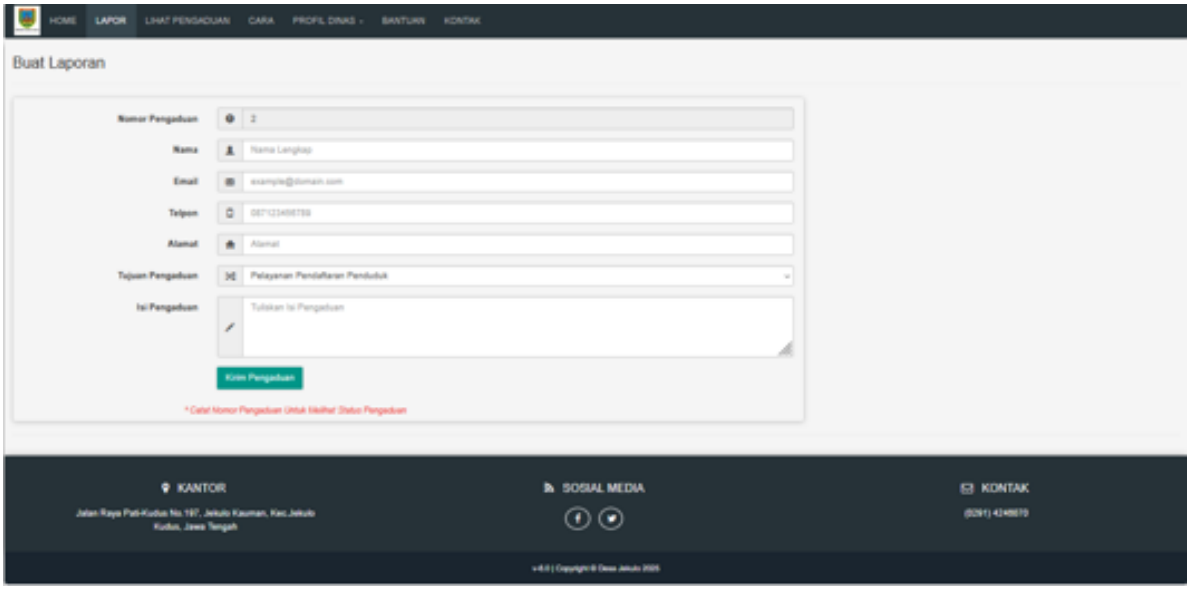

Figure 2. Report

The following image is the dashboard page for the "View complaints" section, on this page users can see complaints from the public. To see complaints, users simply fill in the complaint number, then the complaint will appear.

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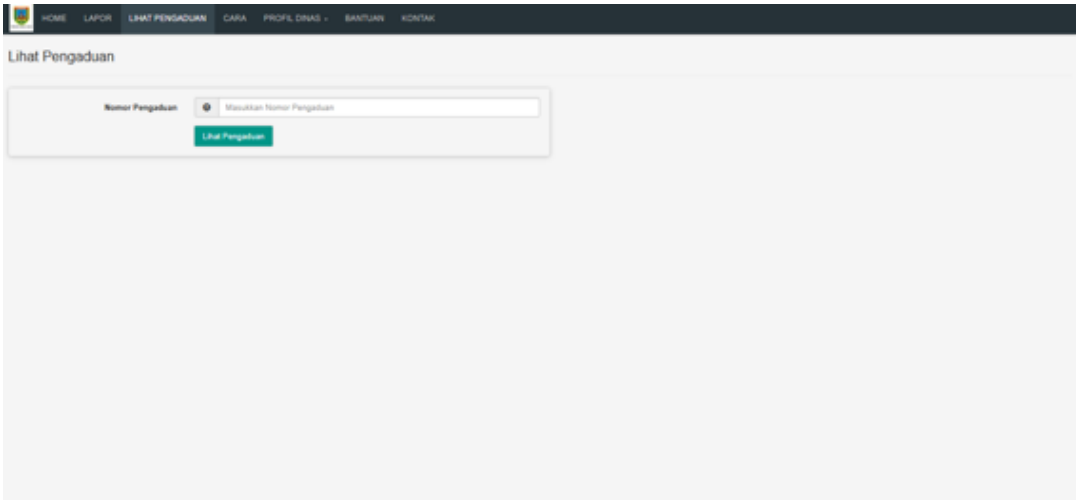

Figure 3. View complaints

The following image is the dashboard page for the "How to" section. On this page, users/people who do not know how to make a complaint can follow the steps that have been written on that page.

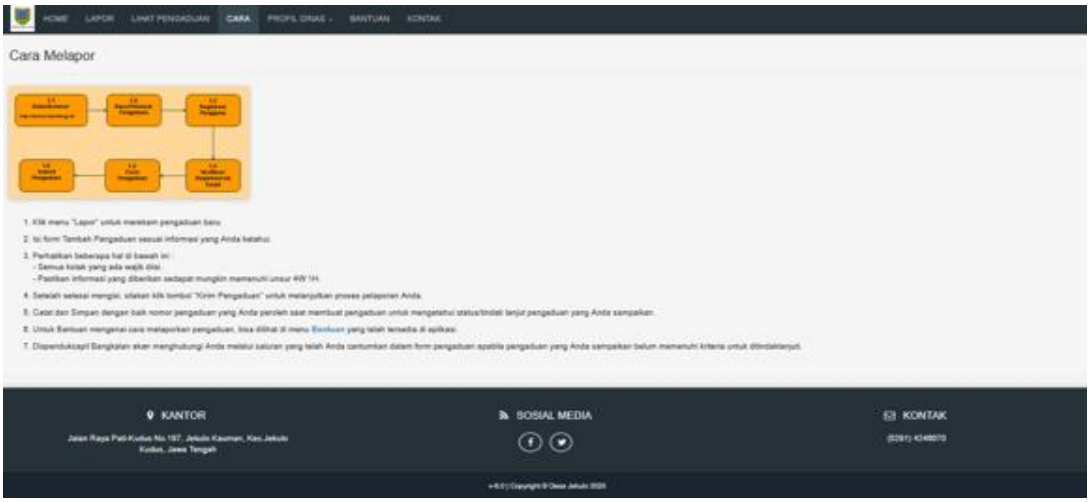

Figure 4. How to

The next image is the dashboard page for the "Service Profile" section. There are several pages on the service profile page, namely the vision and mission (Figure 6), and the organizational structure (Figure 7).

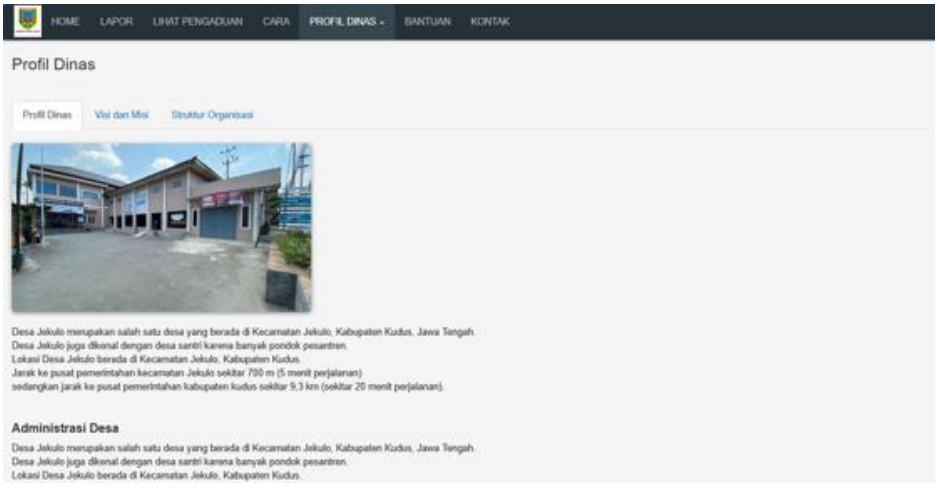

Figure 5. Service Profile

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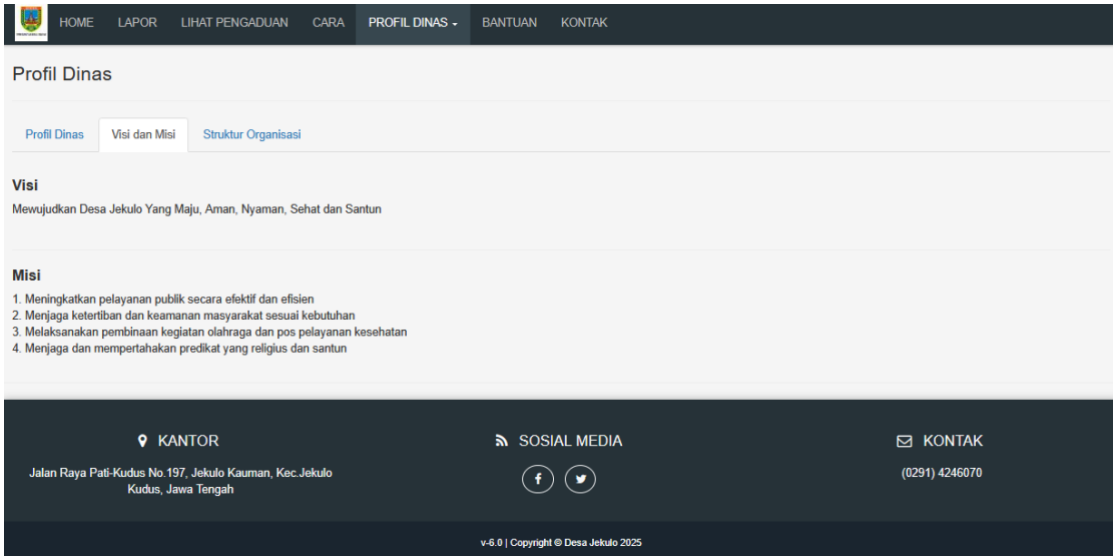

Figure 6. Service Profile

Figure 7. Service Profile

The next image is the dashboard page for the "Help" section. On this page, if the user has other problems, they can read the section on this page.

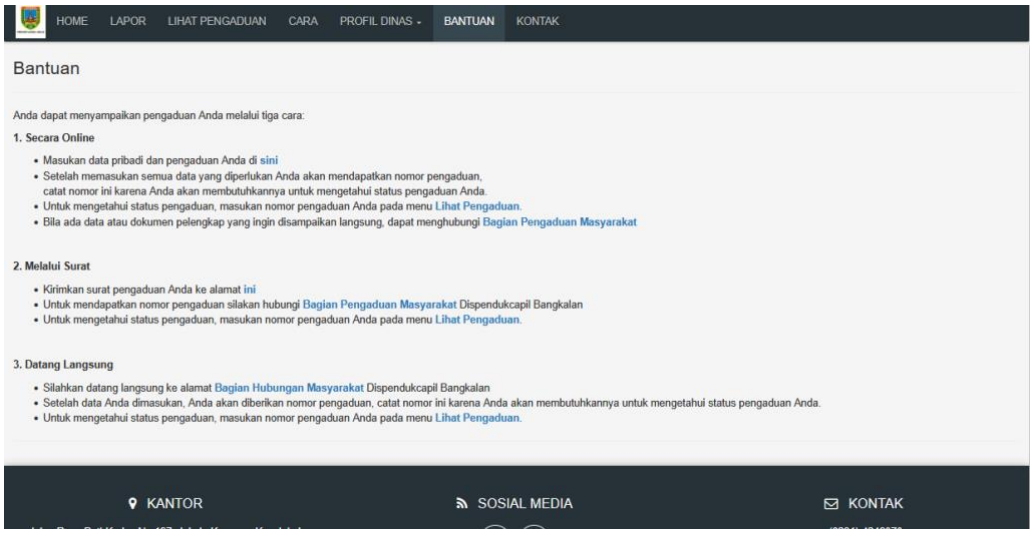

Figure 8. Help

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The next image is the dashboard page for the "Contact" section. This page contains the map location of the Jekulo Village Hall office and the office telephone number, if the user wants to submit their complaint directly to the village hall office.

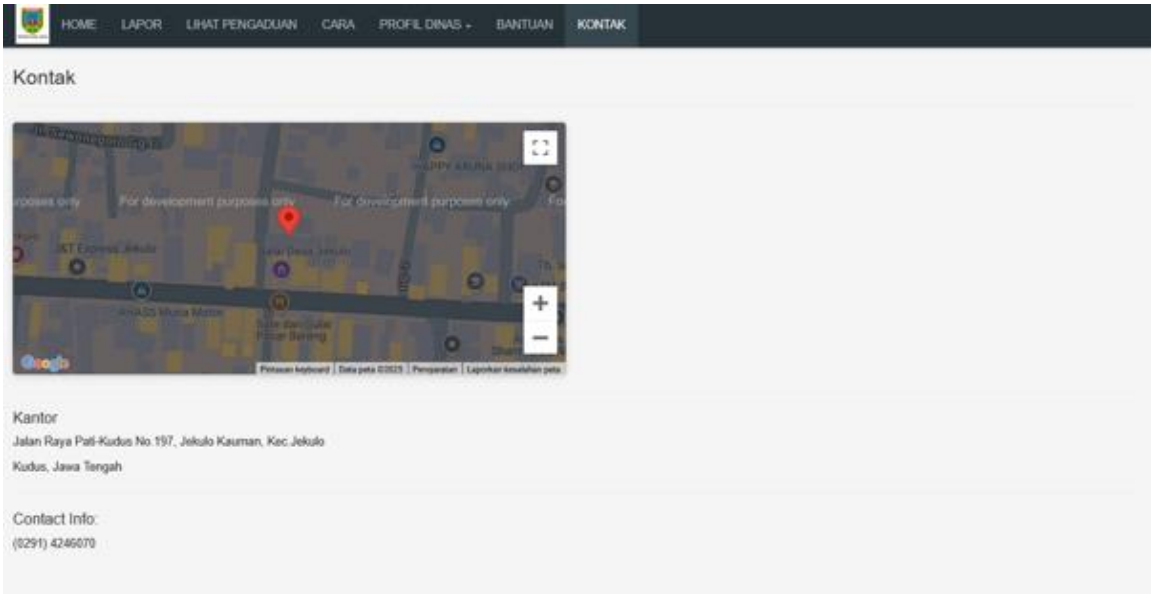

Figure 9. Contact

Admin page

In the image below is the first page, namely the login page for the admin. The admin must have a username and password to enter the system.

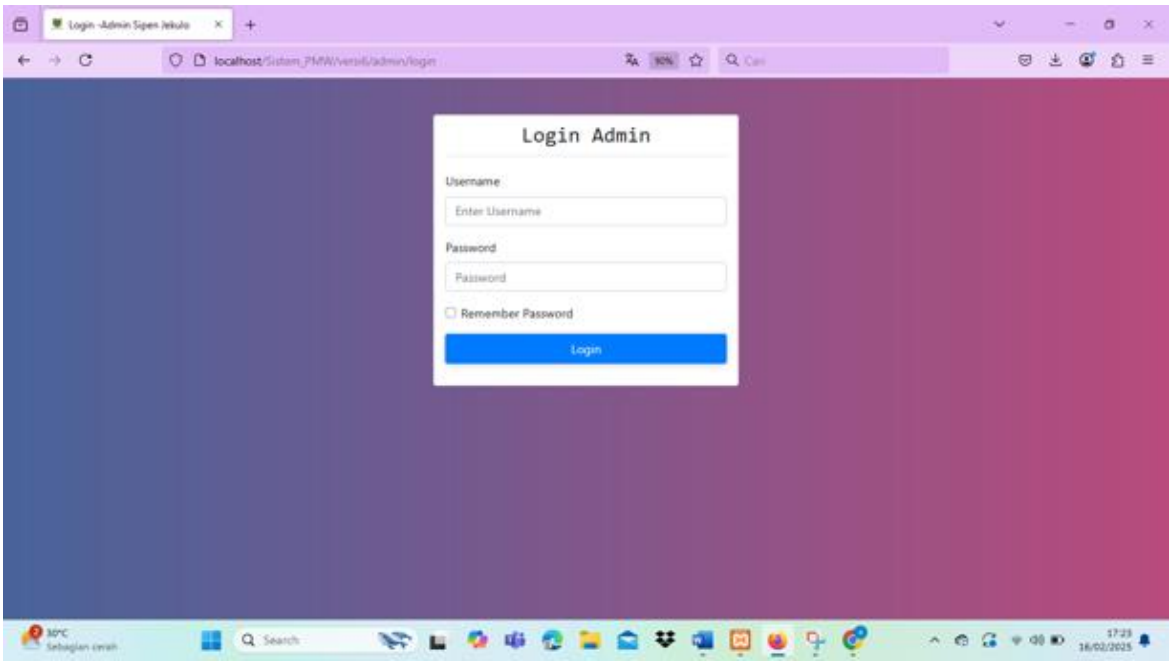

Figure 10. Login admin

The next image is the “Super Admin” dashboard section which contains reports of complaints that have been received, complaints that have not been responded to and complaints that have been responded to.

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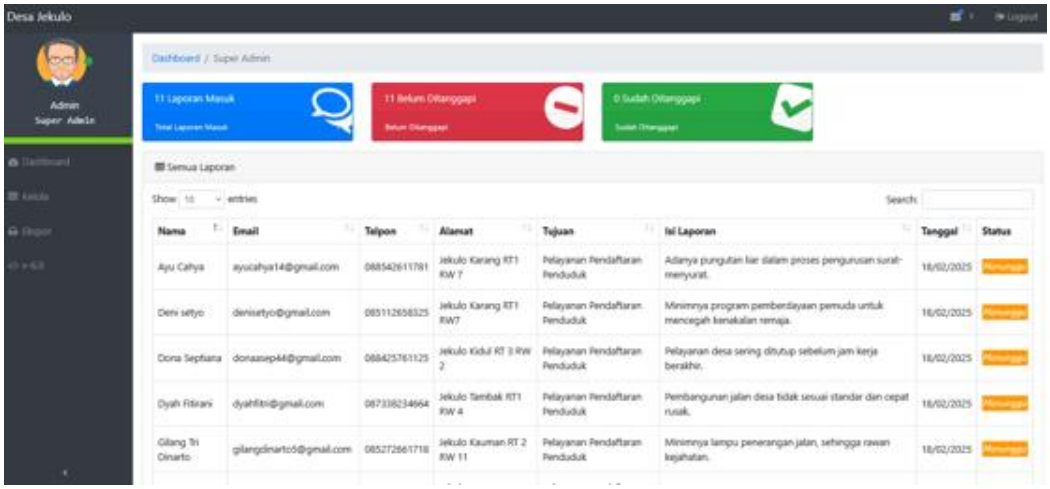

Figure 11. Super Admin

The next image is the “Super Admin” page in the management section, on this page the admin can respond to incoming complaint reports. The admin can also view complaint details, or delete complaints.

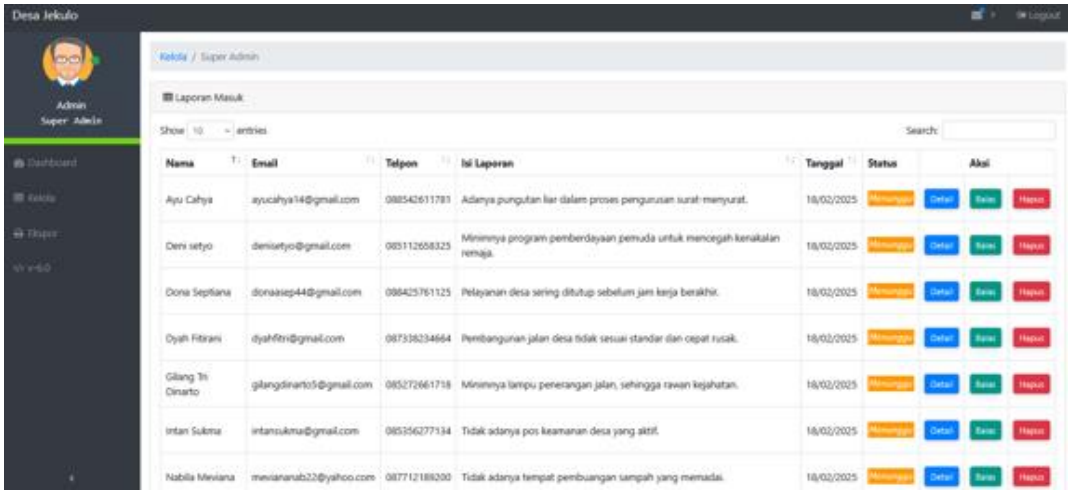

Figure 12. Super Admin

The image below shows the "Super Admin" page in the export section. On this page, the admin can print the results of incoming reports.

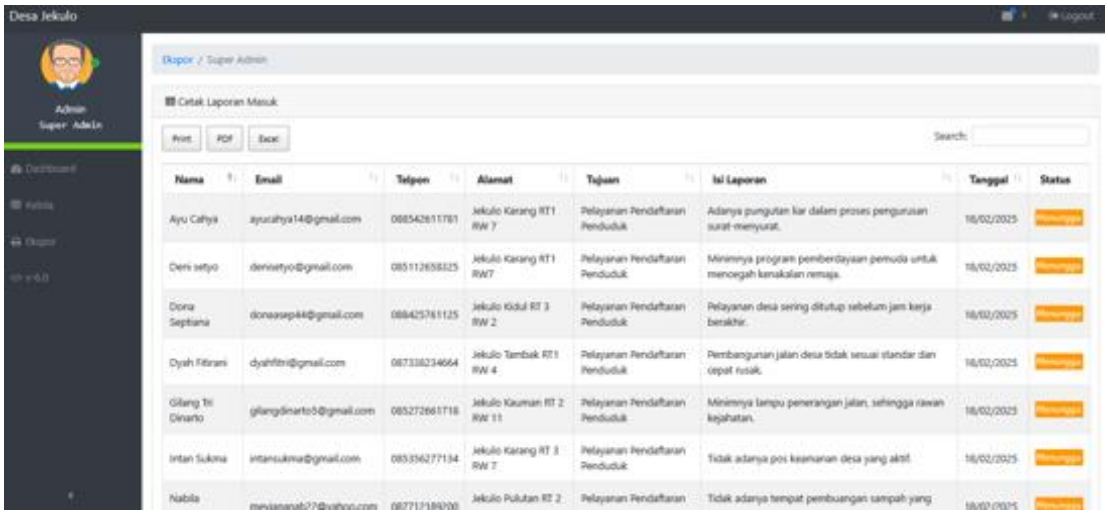

Figure 13. Super Admin

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This research successfully developed and implemented a “Web-Based Citizen Complaint System in Jekulo Village” to accommodate complaints from the people of Jekulo Village within the village. Based on the test results, the system has fulfilled all the functionalities designed with the details below:

Key Functionality Success:

Login: The system is able to verify user data properly, display error messages if there is an error in the username or password input, and ensure secure access to the system. Dashboard: The dashboard displays complaint data according to user role (Super Admin and Admin), providing an intuitive user experience. Add Admin: Super Admin can add new admins with accurate and appropriate data, which is then saved successfully in the system.

Public Complaints: The public can submit complaints easily, and the system records and displays complaints well. Complaint Details: Admin can view the details of each complaint received, including the reporter's information, problem description, and supporting evidence if any. Complaint Response: Admin can provide responses or solutions to complaints submitted by the public, and the system records the history of these responses. Delete Complaint: Admin has the ability to delete complaints that are irrelevant or have been resolved properly. Complaint Report: The system is able to display a summary of complaints within a certain period, allowing Super Admin and Admin to analyze complaint trends and improve services.

This system ensures that the village complaint process is transparent, efficient, and provides quick solutions for the community.

User Testing Success

The application interface design is made intuitive so that users can easily understand and use the application. The system provides clear feedback every time a user takes an action, such as filing a complaint, replying to a complaint, or deleting a complaint. All features, including complaint management by the community, replies by admins, and deletion of irrelevant complaints, are functioning well. This system supports transparency and effectiveness in handling complaints from Jekulo Village residents.

Adding an email notification system so that users get real-time notifications about the status of their complaints. Implement data encryption to protect user information from unauthorized access and potential data leaks.

Developing complaint trend analysis features to assist village governments in making data-based policies. With this development, the system is expected to be more effective in handling public complaints, increasing transparency in village government, and strengthening public trust in the complaint management system.

Conclusion

Here are some conclusions that can be drawn from the results of the Salary Application System development at Toko Barokah Beauté Jepara: Employee payroll applications increase efficiency and accuracy in the payroll process. With the automation of salary, allowance, and deduction calculations, manual errors can be minimized, and the time required to manage payroll is significantly reduced. Transparency and Employee Satisfaction The implementation of payroll applications increases transparency and employee satisfaction. Information on salaries, deductions, and allowances can be easily accessed by employees through the application, thereby reducing uncertainty and increasing trust in company management. Improved Regulatory Compliance of Payroll Applicationsian helps companies maintain compliance with government regulations related to payroll and taxation. With automatic

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update features according to the latest regulations, companies can avoid fines and sanctions due to non-compliance.

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