Optimization of Community Complaint Services through Web-Based Application at Disdukcapil Cirebon

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***Abstract*— Public service is a series of activities aimed at meeting the needs of the community in accordance with applicable laws and regulations. One of the institutions providing public services is the Population and Civil Registration Office (Disdukcapil). In Cirebon City, Disdukcapil still uses WhatsApp as a means of public complaints, which has limitations in terms of structure and integration with other systems, thus reducing the efficiency and effectiveness of complaint handling. Therefore, this study aims to develop a public complaint service application based on a website using the Waterfall method. This application is designed to improve efficiency, transparency, and accuracy in managing complaints, as well as to make it easier for the public to submit complaints and track their follow-up. The results of this study show that the Public Complaint Service Application at Disdukcapil Cirebon City facilitates the public in making online complaint reports and helps Disdukcapil Cirebon City understand the services needed by the community regarding obstacles in making population documents or other services.**

Keywords— ***Public Service; Community Complaints; Disdukcapil; Waterfall***

I. INTRODUCTION

Public service is defined as a series of activities aimed at fulfilling the needs of the community in accordance with laws and regulations. This service is provided to all citizens and residents by public service providers and can include a variety of goods, services, and administrative functions [1]. Dinas Kependudukan dan Pencatatan Sipil is one of the public service institutions responsible for the registration and issuance of documents aimed at recording comprehensive data for each resident [2].

Dinas Kependudukan dan Pencatatan Sipil (Disdukcapil) Kota Cirebon is a government agency responsible for managing population administration, including the issuance of electronic ID cards (KTP-el), family cards, birth certificates, and various other administrative services. As an institution that directly interacts with the public, Disdukcapil plays an important role in providing quality public services.

Optimal public service reflects not only good bureaucracy performance but also contributes to improving public welfare [3]. However, the quality of service provided by Disdukcapil Cirebon City has not yet reached its full potential, as evidenced by various obstacles encountered in handling public complaints. Public complaints are an important source of information for service providers to correct mistakes and consistently improve services [4]. Complaint management is a process and procedure in which companies or governments systematically receive, investigate, resolve, and prevent issues while recovering complaints from problems experienced by customers/citizens [5].

Currently, Disdukcapil Cirebon City still relies on WhatsApp messages as the primary tool for receiving and handling public complaints. While WhatsApp is a commonly used communication platform, this method has several limitations. The use of WhatsApp tends to be unstructured and lacks integration with other systems, thus reducing the efficiency and effectiveness of handling complaints. This limitation highlights the need for a more organized system that can support better public service processes.

Therefore, an information system is required that can effectively and efficiently accommodate public complaints and issues. In the digital era, the application of information technology has become an effective solution to address these problems. Innovations in information technology have played a crucial role in improving the quality of public services [6]. A website is a page containing information represented by individuals or institutions in the form of digital data such as text, images, animations, video, and audio provided via the internet [7]. The development of a Web-Based Public Complaint Application at Disdukcapil Cirebon City could be a strategic step to improve the efficiency, accuracy, and transparency of the public complaint process at Disdukcapil Cirebon City. This application not only facilitates the public in submitting complaints regarding population administration but also helps Disdukcapil Cirebon City manage and respond to complaints more quickly and accurately.

With the Public Complaint Application, the public can submit complaints, receive rapid responses, and track progress directly. The web-based complaint system offers several advantages, including more structured data storage, improved transparency in the complaint handling process, and the ability to integrate with other applications used by Disdukcapil. With this application, it is hoped that the quality of public services in Cirebon City will improve, ultimately enhancing public satisfaction and strengthening the relationship between the government and its citizens.

This Public Complaint Application uses the Waterfall method. The Waterfall method is a structured and sequential information system development approach [8]. It is one of the earliest models of software development, originating from military systems engineering processes [9]. This method consists of related stages such as requirement analysis, system design, implementation, testing, and maintenance. With this approach, each stage must be completed thoroughly before proceeding to the next, thereby minimizing the risk of errors.

The Public Complaint Application at Disdukcapil Cirebon City uses the Laravel framework for web application development. Laravel is an open-source PHP-based web framework created by Taylor Otwell used to develop web applications with the MVC pattern [10]. MySQL is used as the database for efficient data management. MySQL is a service-oriented database program that can be used in various ways. MySQL can operate in text mode, command prompt, or through PHP MyAdmin [11]. By implementing this system, it is expected to create improvements in public service quality that are more responsive, structured, and transparent, thus meeting the expectations of the public in the rapidly advancing digital era.

Several previous studies related to public complaint information systems include research by [12] which developed a Public Complaint Information System for the Samarinda City Industry Office. This system made it easier for the Samarinda City Industry Office to view complaints from residents online and allowed citizens to express their opinions freely without visiting the Industry Office. Another study by [13] focused on a forest and land fire complaint system at BPBD Tebo Jambi, which simplified data collection and the complaint process. A study by [14] on a public complaint information system in Lubuklinggau City enabled quicker, more effective, and efficient processing of public complaints.

This study aims to optimize public complaint services at Disdukcapil Cirebon City by developing a web-based application using the Waterfall method. With the application of this technology, it is expected that the quality of public services will improve, public trust in the government will be maintained, and transparency and accountability in managing complaints will be enhanced

II. METHOD

System Development Methodology is a standard process for development teams to connect all the necessary steps in analyzing, designing, implementing, and maintaining an Information System. The methodology that guides the system development activities is the System Development Life Cycle (SDLC) [15]

This study uses the Waterfall method. The Waterfall method is one of the methodologies that applies a structured and sequential approach to information system development [8]. The Waterfall method is the first software development model published, originating from military systems engineering processes [9]. This method consists of related stages, such as requirement analysis, system design, implementation, testing, and maintenance. The steps of the Waterfall method can be seen in Figure 1.

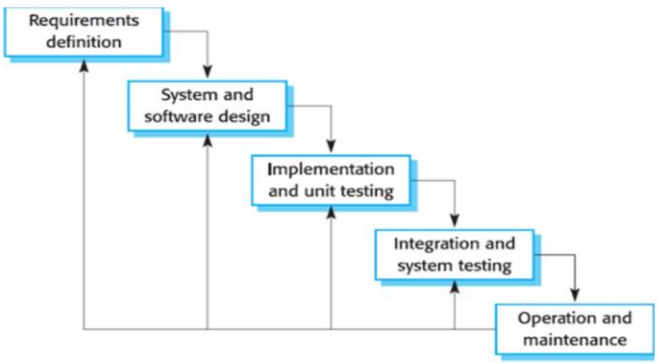

Figure 1. Waterfall Method

Here is a detailed explanation of each phase in the Waterfall method:

1. Requirement Defenition
   The first stage is requirement analysis, which forms the foundation of the system development process. In this research, the requirement definition was conducted by gathering data from interviews with the Dinas Kependudukan dan Pencatatan Sipil (Disdukcapil) Kota Cirebon.
2. System and Sofware Design
   The second stage involves the design of the system and software, which includes discussions about both hardware and software requirements. The hardware required includes the system architecture, and the software includes a basic description of the software abstractions to be developed. Several UML diagrams are used for system design, such as use case diagrams to show interactions between users and the system, activity diagrams to describe the flow of activities, sequence diagrams to show message sequences between objects, and class diagrams to explain the class structure within the system. For software design, the application used in this study is Figma.
3. Implementation and Unit Testing
   The third step is implementation and unit testing, where the software abstraction produced in the previous phase is broken down into groups of programs or program units. In the design of the Public Complaint Service Application for Disdukcapil Cirebon City, the Laravel framework, PHP programming language, and MySQL database are used.
4. Integration and System Testing
   The fourth step is integration and system testing, where the individual program units are integrated and tested as a complete system to meet the specified software requirements. After testing is completed, the software is handed over to the user. In this study, Black Box Testing is used for the testing process.
5. Operation and Maintenance
   The fifth step is operation and maintenance. This phase takes the longest time. The system is installed and used practically. Maintenance may involve fixing previously unknown bugs, enhancing system unit functions, or adding more services in response to emerging new needs.

III. RESULTS AND DISCUSSION

Here is the implementation of the result in the form of the web-based public complaint service application interface for Disdukcapil Cirebon City.

Figure 2. Main Page

This is the main page where the available menu options on the homepage allow citizens to view a guide on how to report complaints regarding issues related to Disdukcapil Cirebon City, particularly in population administration services.

Figure 3. Registration for Citizens

This is the registration page for citizens, where they must fill out a form with their name, NIK (National Identification Number), date of birth, age, email, username, and password.

Figure 4. Login Page

The login page is used for both Admins and Citizens. Once the email and password are entered correctly, users will be directed to the complaint page. Admins will be directed to the Admin page, while Citizens will be directed to the Citizen page.

Figure 5. Citizen Complaint Page

This is the complaint submission page where citizens can submit complaints by filling out a complaint form that includes the complaint title, content, category, subcategory, priority scale, and image upload.

Figure 6. Citizen Subcategory Form

The subcategory form contains a list of frequently asked questions based on categories such as population registration, civil registration, and others.

Figure 7. Citizen Priority Scale Form

This form allows citizens to choose the priority scale for their complaint. If the complaint is urgent (e.g., required for important documentation), they can select the urgent priority. Other priority options are also available.

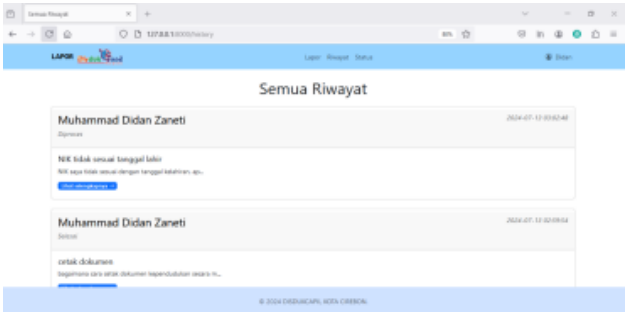

Figure 8. Citizen History Page

This page allows citizens to view a detailed history of all the complaints they have made.

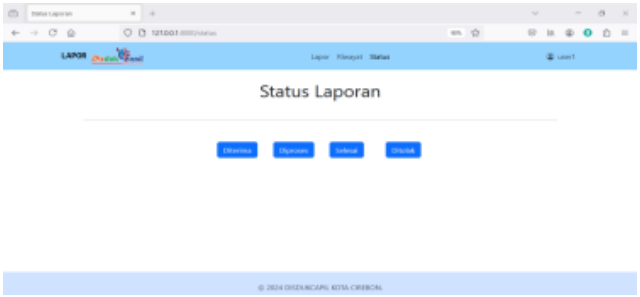

Figure 9. Citizen Complaint Status Page

The status page displays complaint data based on the complaint status. The status is assigned by the admin while managing complaints. A report with the status "Accepted" indicates that the report has been received by the admin and will be processed. A report with the status "In Process" means the report is currently being processed by the admin, and the citizen will receive a response to their complaint via email, which can also be viewed in their account.

A report with the status "Resolved" means the report has been responded to by the admin, and the citizen has received the necessary information. A report with the status "Rejected" indicates that the complaint has been rejected by the admin because it is either a duplicate (a complaint that has already been addressed) or contains spam.

The page displays complaint data based on the status, which is assigned by the admin while managing the complaints. A report with the status "Accepted" is one that has been received by the admin and will be processed. A report with the status "In Process" indicates that the report is being processed by the admin, and the citizen will get a response via email. A report marked "Resolved" means the admin has responded, and the citizen has received adequate information. A report marked as

"Rejected" is one that has been rejected by the admin, either because it's a duplicate or contains spam.

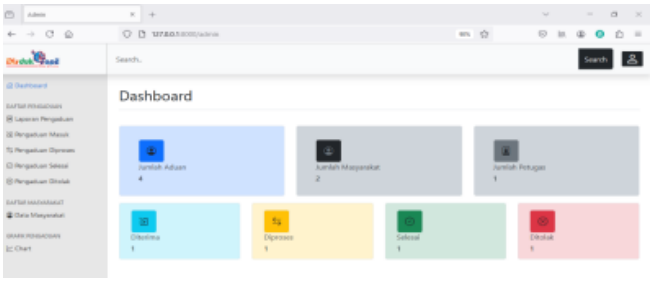

Figure 10. Admin Dashboard Page

The admin dashboard allows admins to view and comment on citizen complaints. Admin responses will be sent to the citizen's email.

Figure 11. All Reports Page (Admin)

This page displays all complaint reports with the following data: Citizen name, complaint category, subcategory, priority, images, complaint content, date of submission, report status, and verification status for admin processing.

Figure 12. View Complaint Page (Admin)

This page allows the admin to review and respond to complaints. Responses will be sent to the citizen's email while the complaint is still being processed and has not yet been resolved.

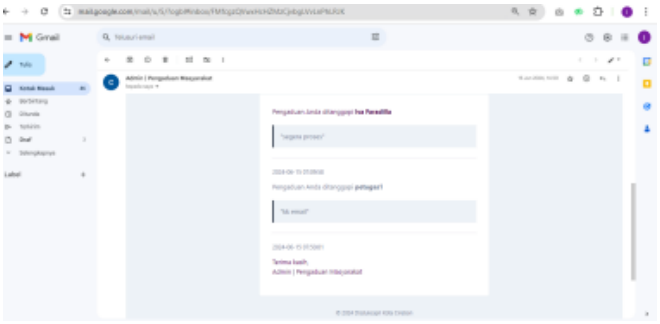

Figure 13. Complaint Response Page

The complaint response sent via email can be replied to by the citizen using that same email. Admins and citizens can communicate about the complaint through email.

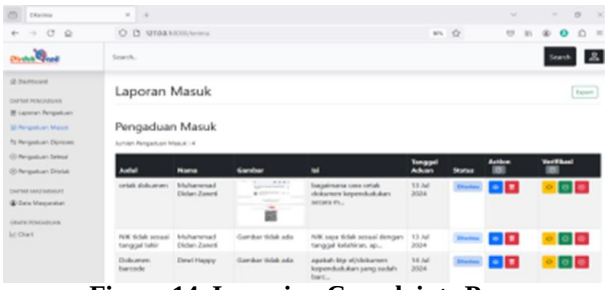

Figure 14. Incoming Complaints Page

This page allows admins to verify and categorize complaints. If the complaint is being processed, it will be marked as "In Process." If the complaint is resolved, it will be marked as "Resolved," and if rejected, it will be marked as "Rejected."

IV. CONCLUSIONS

Based on the results of this study, the development of the web-based public complaint application for the Disdukcapil Cirebon City is as follows:

1. The web-based public complaint service at Disdukcapil Cirebon City makes it easier for citizens to submit complaints online.
2. The web-based public complaint service at Disdukcapil Cirebon City also helps the institution (Disdukcapil) to understand the services needed by the public, particularly regarding issues in creating population documents or other related services.

The web-based public complaint application at Disdukcapil Kota Cirebon has the potential to improve service quality. With this system, the community can easily submit complaints, suggestions, or feedback in real-time without having to visit the office in person. The complaint process becomes faster, more transparent, and well-organized, allowing staff to respond to and follow up on each report more

effectively. Additionally, the complaint tracking feature enables citizens to monitor the status of their issues, ultimately increasing public trust in Disdukcapil's services.

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