

WEB-BASED MAIL ADMINISTRATION INFORMATION SYSTEM AT THE LEGAL BUREAU OF SOUTHEAST SULAWESI SECRETARIAT

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Abstract

The administration of correspondence is an important element in the governance of government organizations, but its manual management often causes various problems such as delays in distribution, difficulty in searching for archives, and lack of transparency. This research aims to design and develop digital information applications for online mail administration management as a solution to increase productivity, speed, and accuracy in the process of handling official documents within the Legal Bureau of the Regional Secretariat of Southeast Sulawesi Province. The development method applied is Agile with the Scrum framework approach. The application was built using the PHP programming language based on the Laravel framework. The testing process is carried out using the black box testing method to ensure that each feature in the application functions as expected. The development results show that this application is able to handle incoming and outgoing mail directly, perform the disposition process, search for archives, and manage users efficiently. The system is also considered valid based on testing basic functions, interface, security, and navigation. Thus, this information system can be a digital solution that supports the improvement of efficiency and transparency of correspondence administration in the government environment.

Keywords: Information System; Correspondence; Scrum; Laravel; Government Administration

Abstrak

Administrasi persuratan merupakan elemen penting dalam tata kelola organisasi pemerintahan, namun pengelolaannya yang masih bersifat manual sering kali menimbulkan berbagai permasalahan seperti keterlambatan distribusi, kesulitan dalam pencarian arsip, dan kurangnya transparansi. Penelitian ini bertujuan untuk mendesain dan mengembangkan aplikasi informasi digital untuk pengelolaan administrasi surat secara online sebagai solusi dalam meningkatkan produktivitas, kecepatan, serta ketepatan dalam proses penanganan dokumen resmi di lingkup Biro Hukum Sekretariat Daerah Provinsi Sulawesi Tenggara. Metode pengembangan yang diterapkan adalah Agile dengan pendekatan kerangka kerja Scrum. Aplikasi dibangun menggunakan bahasa pemrograman PHP berbasis framework Laravel. Proses pengujian dilakukan dengan metode pengujian black box guna memastikan bahwa setiap fitur dalam aplikasi berfungsi sesuai ekspektasi. Hasil pengembangan menunjukkan aplikasi ini mampu menangani surat masuk dan keluar secara langsung, melakukan proses disposisi, pencarian arsip, serta pengelolaan pengguna secara efisien. Sistem ini juga dinilai valid berdasarkan pengujian fungsi dasar, antarmuka, keamanan, dan navigasi. Dengan demikian, sistem informasi ini dapat menjadi solusi digital yang mendukung peningkatan efisiensi dan transparansi administrasi persuratan di lingkungan pemerintahan.

Kata kunci: Sistem Informasi; Persuratan; Scrum; Laravel; Administrasi Pemerintahan

INTRODUCTION

Correspondence administration is one of the important aspects in the governance of government organizations, including the Legal Bureau of the Regional Secretariat of Southeast Sulawesi Province. Correspondence is the main medium in

the process of formal communication, documentation, and decision making. However, the manual management of letters that is still widely applied causes various obstacles, such as delays in distribution, the risk of losing documents, difficulties in finding archives, and lack of



transparency and efficiency in the administrative process (Widyawati et al., 2021).

With the advancement of information technology, the utilization of online mail management administration applications is a strategic step in solving existing problems. This web-based application allows the integration of incoming and outgoing mail processing in real-time and can be accessed anytime and from anywhere as long as an internet connection is available (Widyawati et al., 2021). This not only speeds up the process of distributing and archiving letters, but also increases data accuracy, transparency, and facilitates monitoring and reporting of correspondence administration (Arsyani Febby Suare & Rahman Prehanto, 2022)

Several previous studies have discussed the development of web-based correspondence administration information systems in government organizations and educational institutions. One of the studies was conducted by (Rizqa Raaika Bintana, 2025) who developed an electronic correspondence application at Jambi University. This research shows that the implementation of digital correspondence applications is able to improve the efficiency and effectiveness of official document management, from receiving, data collection, to archiving letters, as well as supporting the process of disposition and legal electronic signing. As a result, this application makes it easier for all academicians to access and manage letters in real-time, increase transparency, and speed up the administrative process. Another Study conducted by (Melisha, 2024) showed that the implementation of digital applications for mail management at the Palopo City Office of the Ministry of Religion had a significant effect on increasing efficiency, openness, and responsibility in the correspondence administration process, and was able to minimize operational obstacles that were often encountered in manual systems. In addition, a study by (Widyawati et al., 2021) at the Bureau of Personnel and Organization of the National Narcotics Agency proved that a web-based correspondence system can speed up letter distribution, facilitate reporting, and overcome document access constraints that previously occurred in the manual system.

Research and implementation of web-based correspondence administration information systems have shown a positive impact on improving the efficiency and effectiveness of organizational work. However, these previous studies still have limitations. For example, the study by (Rizqa Raaika Bintana, 2025) was limited to the academic context, (Melisha, 2024) emphasized efficiency and openness without comprehensive

features for archive search and user management, and (Widyawati et al., 2021) focused mainly on distribution and reporting. In contrast, the novelty of this research lies in its implementation at the Legal Bureau of the Regional Secretariat of Southeast Sulawesi Province, an institution that has not been the subject of earlier works. Furthermore, the system was developed using the Agile methodology with the Scrum framework and implemented with the Laravel framework, ensuring adaptability and scalability. This study also introduces distinctive features such as digital disposition, archive search with time-based filters (weekly, monthly, yearly), letter status management (new, processed, completed), and secure multi-user access. In addition, system testing was focused on validating these transaction processes using black-box testing. These aspects clearly differentiate this study from prior works and represent an innovative step in supporting modern, responsive, and professional governance.

Therefore, this study aims to design and develop a web-based correspondence administration information system for the Legal Bureau of the Regional Secretariat of Southeast Sulawesi Province as a solution to improve efficiency, transparency, and professionalism in government correspondence management.

RESEARCH METHODS

The method used in designing this information system is Agile Software Development. Agile is an approach to software development that emphasizes flexibility and high adaptability to various forms of change during the development process (Fahrudin & Ilyasa, 2021). This approach is iterative and short-term, allowing the development team to quickly respond to dynamic and changing needs. In the context of this research, the development of an online mail management application at the Legal Bureau of the Regional Secretariat of Southeast Sulawesi Province applies an Agile approach structured with the Scrum work model, which provides an organized work structure in managing projects in a phased and collaborative manner. The development stages follow a systematic Scrum work cycle as shown in Figure 1 (Mokhammad Alfin Alfardizi, 2023).

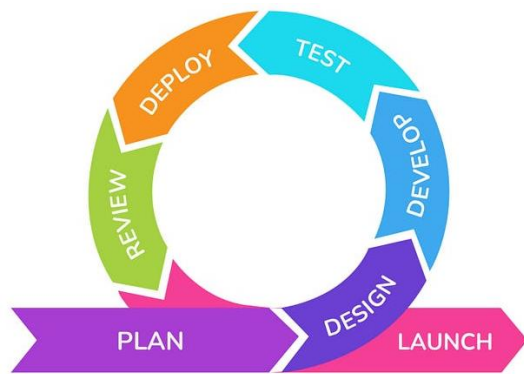


Figure 1. Research Stages
Source: Medium.com

1. Planning

The planning stage includes collecting user requirements outlined in User Stories and preparing the Product Backlog, which is a prioritized list of features to be developed (Dzaky & Kurniawan, 2023). The team also conducts Sprint Planning to determine which features will be worked on in the next sprint (Praharaningtyas Aji et al., 2024) (Ilfa et al., 2023). At this stage, requirements were collected from staff of the Legal Bureau. The needs were then outlined into user stories and compiled into a product backlog. Sprint planning was carried out to prioritize features such as incoming/outgoing mail, disposition, archiving, and user management.

2. Design

In the design stage, the software design team creates a system model with a focus on the structure and behavior of the system (Fitria et al., 2020). The design includes the selection of architecture, components, interfaces, as well as design principles to ensure quality and ease of implementation (Wirawan & Adhy, 2025). The system design was created using UML diagrams (use case, class, and activity diagrams) to illustrate workflows such as login, adding letters, searching archives, and disposition. This ensured that the system structure was clear before implementation.

3. Development

The implementation stage of system development is carried out by a team of programmers with reference to the design that has been prepared and the sprint backlog (Praharaningtyas Aji et al., 2024). This process takes place during the sprint and emphasizes intensive collaboration between team members. In this stage, the system is developed through writing code using the PHP programming language and built by utilizing the Laravel Framework to produce

web-based applications (Hardiansyah et al., 2023). The development process was conducted in iterative sprints by the programming team. The application was built using PHP with the Laravel framework, following the sprint backlog. Each sprint focused on implementing prioritized features, such as user authentication and correspondence processing.

4. Testing

After development, testing is carried out to ensure that the features run as needed and are error-free (Renata et al., 2022). Testing is done iteratively during the sprint to detect and fix bugs early (Hardiansyah et al., 2023). System testing was conducted using a black-box testing approach to avoid the occurrence of bugs or malfunctions. In addition, the validation process of input and output is also carried out to ensure that the system runs as designed (Rahman Abdillah et al., 2025). System testing was carried out during each sprint using the black-box testing method. Inputs were given to features (e.g., login, add data, disposition), and outputs were validated to match specifications. Security testing, navigation flow, and interface consistency were also evaluated.

5. Deployment

The deployment stage refers to the process of installing or releasing a system that has been developed and tested into a production or staging environment, enabling access and use by end users or stakeholders. In this study, the deployed system was the Correspondence Information System (Pratama et al., 2022). After successfully passing internal testing, the system was first deployed in a staging environment and subsequently installed for trial use by the Legal Bureau staff. This process facilitated the collection of early feedback and allowed necessary adjustments prior to the official launch.

6. Review

Sprint Review is a meeting to evaluate sprint results, during which the team presents the completed features to stakeholders for feedback and approval (Dzaky & Kurniawan, 2023). In this case, sprint reviews were carried out with stakeholders from the Legal Bureau. The team showcased completed features, such as mail disposition and archive search, and the feedback received was utilized to guide improvements in the subsequent sprint.

7. Launch

Launch is the final stage where the enhanced product or feature is officially released and made available for use by end users (Pratama et al., 2022). In this case, the launch was carried out after all testing and improvements were completed, marking the product as ready for operational use within the Legal Bureau (Chandra Ramadhan et al., 2025). This stage not only signified the release of the application for correspondence management but also initiated the process of system maintenance and the potential development of future features.

RESULTS AND DISCUSSION

A. Design

In this study, an application design of the correspondence administration information system was carried out which was tailored to functional needs and designed simply so that it was easy for users to understand. The design of this application begins with modeling use case diagram, class diagram and activity diagram consisting of login activity, add edit activity, view data and others.

1. Use Case Diagram

Use case diagram is one type of diagram in the Unified Modeling Language (UML) that shows modeling for the behavior of the information system being created (Afifah & Setyantoro, 2021). An overview of the use case diagram is depicted in Figure 2.

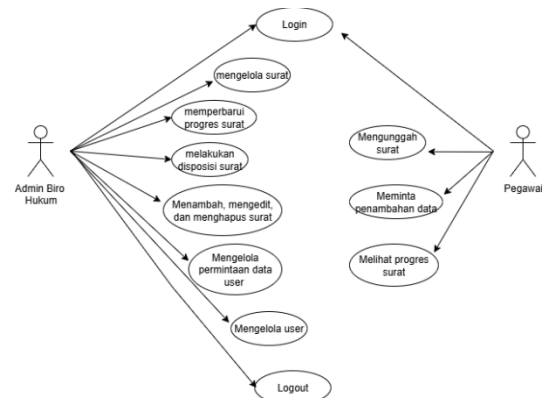


Figure 2. Use Case Diagram

2. Class Diagram

A class diagram represents one of the static structure diagrams in UML (Unified Modeling Language) that serves to illustrate the system's structure by specifying the classes to be developed for constructing the system. (Afifah & Setyantoro, 2021). This diagram helps in designing the system framework logically and is used as a reference in the software implementation stage. An overview of the class diagram flow is shown in Figure 3.

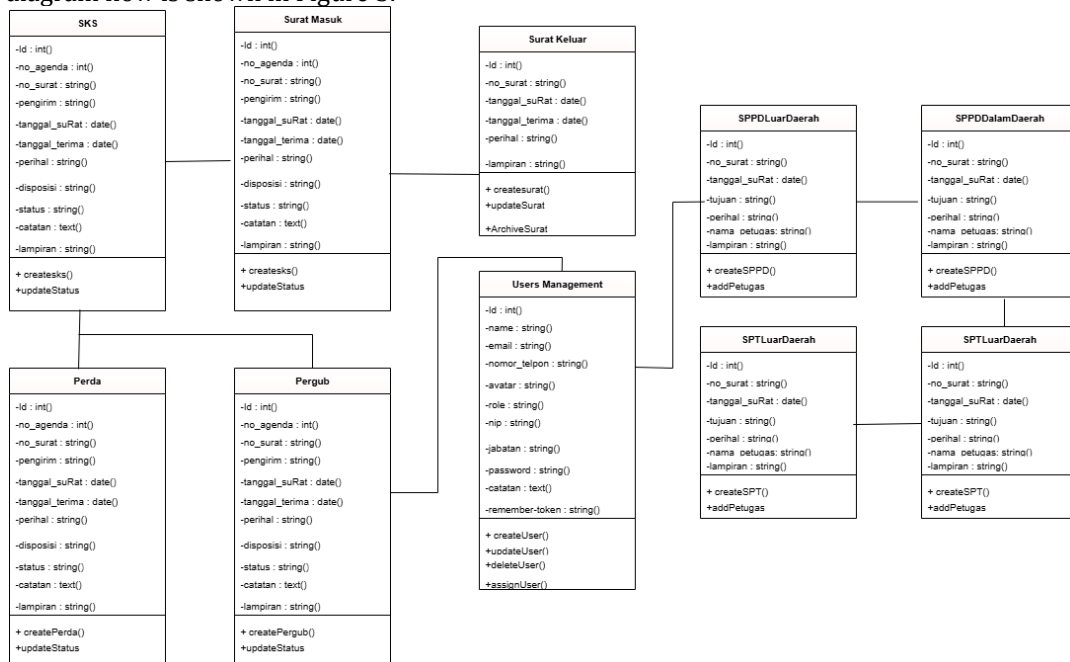


Figure 3. Class Diagram

3. Activity Digran

After designing the use case model, each scenario contained in it will be explained in more detail through activity diagrams. An activity diagram is a form of modeling that shows the working mechanism of an object or system. This diagram describes the systematic workflow of a use case, starting from the starting point to the end point of the process, where each activity is represented using notations that match its role (Mallisza et al., 2024).

a. Add Data Activity Diagram

This activity diagram describes the process of adding letter data by the user. After logging in, the user opens the "add letter" menu, fills in the form, and saves the data. The system gives a status of "waiting" and sends a notification to the admin. The admin reviews the letter, then approves or rejects it. The system changes the status of the letter according to the decision and sends the result to the user. The flow of this diagram is shown in Figure 4 below.

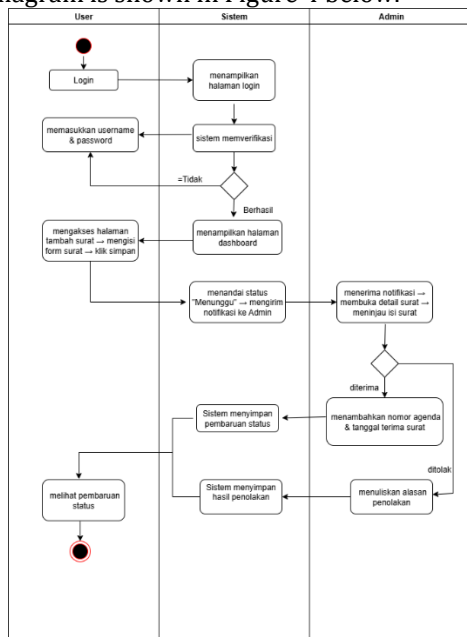


Figure 4. Add Data Activity Diagram

b. Letter Disposition Diagram

This process explains the admin's steps in disposing of letters through the system. After successfully logging in, the admin adds letter data according to its type (incoming letter, regional regulation, or governor regulation), saves it, then proceeds to the disposition process confirmed by the system. A detailed

flowchart of this activity is presented in Figure 5 below.

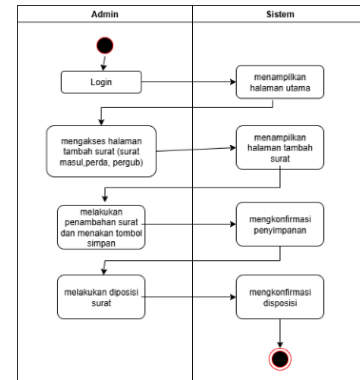


Figure 5. Letter Disposition Diagram

c. Search Letter Diagram

In this process, the admin searches for letter archives by utilizing the filter feature based on week, month, or year. After logging in and accessing the archive page, the system will show the results based on the applied filters, making the archive search process easier and more organized. Figure 6 below shows a clear flowchart of the letter search process.

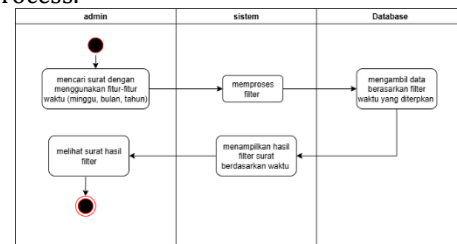


Figure 6. Search Letter Diagram

B. Implementation User Interface

UI focuses on creating an interface that facilitates user interaction with application elements or devices, so as to increase user satisfaction and efficiency in using the system (Budi Satria Utama, 2022). A good UI also pays attention to design principles such as user compatibility, consistency, and ease of use (Prihastomo, 2024). The following describes the implementation of UI in the correspondence administration information system.

1. Login Page View

Figure 7 shows the login interface where users access the system by providing their username and password. The illustration is presented below.

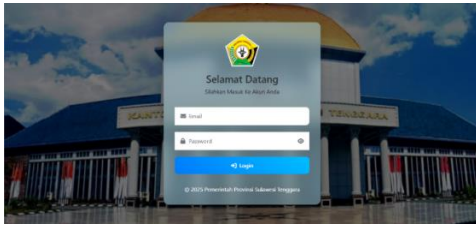


Figure 7. Login Page View

2. Admin Dashboard Page View

The following figure shows the initial view of the admin dashboard which contains statistical and graphical information about incoming and outgoing mail data. This display helps the admin monitor overall activity. Figure 8 shows the display of the admin dashboard page can be seen below.

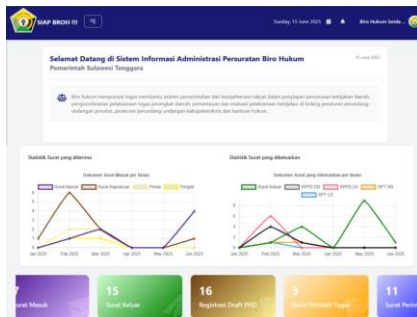


Figure 8. Admin Dashboard Page View

3. Incoming Mail Page View

This page displays a list of incoming letters that have been recorded in the system. There are search features, filters, and action buttons to view, edit, or delete the letter in question. The display of the incoming mail page is shown in Figure 9 below.

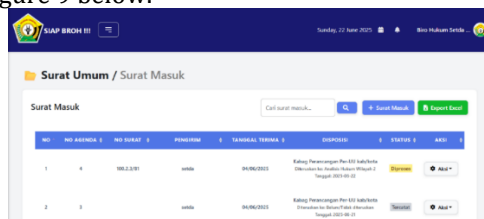


Figure 9. Incoming Mail Page View

4. Incoming Mail Add Page View

This page shows a form for adding new incoming mail data. Users can fill in information including the mail number, origin, date of receipt, and the letter's topic. The following shows Figure 10 of the add incoming mail page.

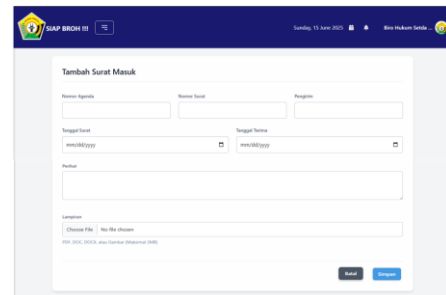


Figure 10. Incoming Mail Add Page View

5. Incoming Mail Edit Page View

image below shows a form to modify incoming mail data that has been previously stored. Admins can update information as needed. Figure 11 below illustrates the edit letter form interface.

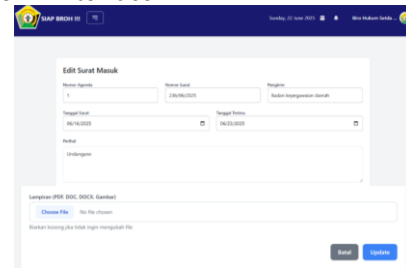


Figure 11. Incoming Mail Edit Page View

6. Incoming Mail View Details Page View

This image displays the full information of an incoming mail, including the sender, mail number, category, and summary content of the mail. The following Figure 12 displays the details of the letter.

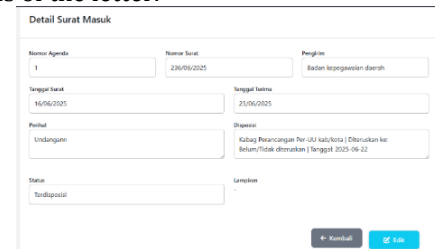


Figure 12. Mail View Details Page View

7. Incoming Mail Delete Page View

The following image shows the confirmation pop-up that appears when the admin wants to delete incoming mail data. The system ensures that the user is sure before deleting. A depiction of how the deletion process works is presented in Figure 13 below.

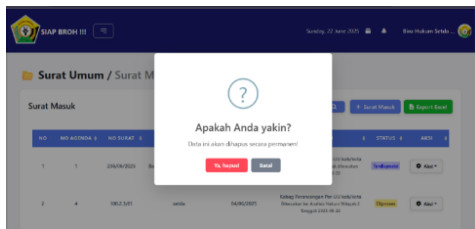


Figure 13. Incoming Mail Detail Page View

8. Incoming Mail Disposition Page View

The following display shows the disposition feature, where the admin can direct incoming letters to certain parties along with additional notes. The display of the letter disposition process is shown in Figure 14 below.



Figure 14. Mail Disposition Page View

9. Incoming Mail Status Update Page View

This figure shows a menu of letter status options, such as "New", "Processed", "Completed", and others that can be updated according to the development of the letter. A visualization of how letter statuses are updated is shown in Figure 15 below.

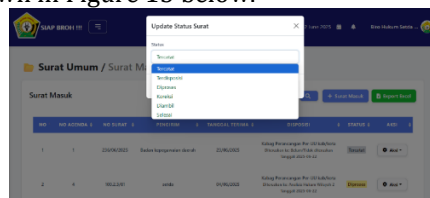


Figure 15. Letter Status Update Page

10. Incoming Mail Upload Approval Request Page View

The following view shows a list of letters waiting for approval to be uploaded, including information on the submission time and approval status. The following is a list of letter approval requests can be seen in Figure 16.

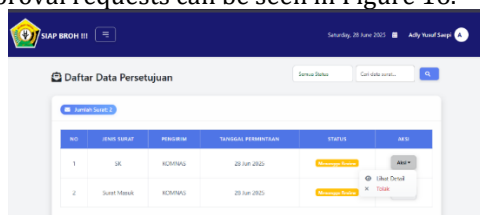


Figure 17. Mail Upload Approval Page

11. Incoming Mail Upload Approval Detail Page View

image displays the full details of a letter upload request, which includes information on the sender's name, subject, date, and action buttons. The detailed display of letter approval requests can be seen in Figure 18 below.

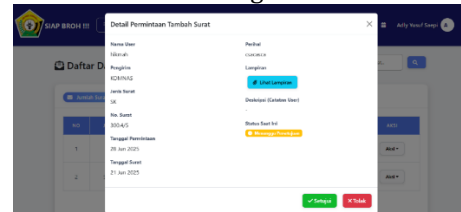


Figure 18. Mail Upload Approval Detail Page

12. Incoming Data Request Approve Page View

The following is a dialog box that appears when the admin wants to approve the incoming letter data upload request. The following Figure 19 is an example of the data approval process display.

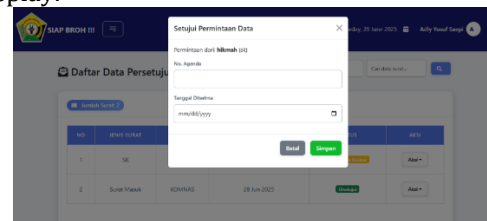


Figure 19. Approve Data Request Page

13. Incoming Data Request Reject Page View

The following figure displays the data request rejection confirmation window, where the admin can provide a reason for rejection before sending the decision. The display of the data request rejection process can be seen in Figure 20 below.

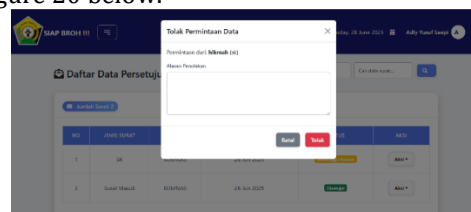


Figure 20. Incoming Data Request Reject Page View

C. Testing

Software testing plays a vital role in the development cycle, aiming to verify the quality, efficiency, and security of the software product (Rahman Abdillah et al., 2024). The black box testing technique applied in this study aims to ensure that all functions in the system, including login, correspondence processing, disposition, archiving, and user management, operate

accurately as intended. this method is carried out by providing a number of inputs to the system, then evaluating whether the resulting output is in accordance with predetermined specifications. The test results are presented as follows.

1. Basic Function Testing

This testing is conducted to confirm that essential features within the system, including user authentication, data addition, modification, and deletion of mail records, function correctly and align with the system specifications. Table 1 below outlines the test results for these core functionalities.

Table 1. Basic Function Testing

No	Test Case	Expected Results	Results Obtained	Description
1	Login with correct credentials	Login to the admin dashboard	True	Valid
2	Login with wrong username / password	Login error message failed	True	Valid
3	Add new incoming mail	The letter is saved to the database and appears in the list	True	Valid
4	Edit outgoing letter data	Changes are saved and appear when viewed again	True	Valid
5	Delete decree letter	Data is deleted from the mailing list	True	Valid

2. Disposition Process and Letter Status Testing

test is conducted to verify that the letter disposition process and letter status changes run according to the predetermined business flow. The system must be able to record, display, and update letter status accurately. Table 2 below presents the results of testing the disposition feature and letter status functionality.

Table 2. Disposition Process and Letter Status Testing

No	Test Case	Expected Results	Results Obtained	Description
1	Disposition of SK letter to certain officials	Letter changed status and listed as dispositioned	True	Valid
2	Update the status of the Pergub letter to 'Completed'	Status changed and displayed in mail details	True	Valid
3	View mail list by status	Filters work and display according to status	True	Valid
4	Reject incoming mail	Reasons for appearing in	True	Valid

	requests with reasons	rejection details		
5	Approve mail requests and assign agenda numbers	Agenda number appears in the system	True	Valid

CONCLUSIONS AND SUGGESTIONS

Conclusion

From the findings obtained through this research and its implementation, it is inferred that the web-based correspondence administration information system designed for the Legal Bureau under the Regional Secretariat of Southeast Sulawesi Region is capable of addressing key challenges commonly encountered in manual mail processing, such as delays in distribution, difficulties in retrieving archived documents, and a lack of administrative transparency. This system facilitates efficient handling of both incoming and outgoing correspondence in real-time, and enables reliable monitoring of dispositions and mail status. Applying the Agile methodology, complemented by the Scrum approach, enables a systematic and adaptable system development process, producing an application that aligns with the needs of its users. All functionalities tested through the black box testing technique produced valid outcomes and complied with the intended design specifications. Consequently, the system not only enhances operational efficiency and accountability but is also suitable for recommendation to other public sector institutions experiencing similar obstacles. Future improvements may include the addition of integration features between organizational units or linkage with national archival systems, along with enhancements to the system's security and scalability to support broader and more dependable service delivery.

Suggestion

As a follow-up to the development of this web-based correspondence administration information system, there are several things that can be taken into consideration for future system improvement and development:

- Improving Data Security and System Access Considering that this system handles important and confidential administrative data, strengthening security aspects, such as the implementation of double authentication and data encryption, is highly recommended.

- b. To maximize the effectiveness of the system's utilization, periodic training or awareness programs should be provided to all users, with a focus on personnel directly engaged in mail management.
- c. Development of Mobile Version To increase flexibility and accessibility, creating a mobile-based version of the system is a strategic move. This allows users to monitor, manage, and disposition mail efficiently through mobile devices.
- d. Integration with Other Government Information Systems, The system that has been developed has the potential to be linked with other governmental information platforms, such as electronic archiving systems or human resource management systems, in order to establish a more cohesive and efficient administrative environment.

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