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UI/UX Design of an Incoming and Outgoing Mail Information System Using The Design Thinking Method

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Abstract

The Jambi City Inspectorate Office currently manages incoming and outgoing mail manually using logbooks, which leads to risks of document loss and inefficiency in data retrieval. This research aims to design the User Interface (UI) and User Experience (UX) for an Incoming and Outgoing Mail Information System (SIMAK) that is user-friendly to minimize these operational constraints. The method employed is Design Thinking, which consists of five stages: empathize, define, ideate, prototype, and test. The result of this research is a web-based application prototype designed using Figma, featuring management tools for incoming mail, outgoing mail, dispositions, and reports. Testing conducted using the System Usability Scale (SUS) method with 10 respondents yielded an average score of 89.75. This score places the application design in the "Acceptable" category with a "Good" rating, indicating that the system is easily understood and effectively meets user needs.

Keywords: *UI/UX, Design Thinking, Information Systems, Incoming Mail, Outgoing Mail, System Usability Scale.*

1. Introduction

Digital transformation has a significant impact on an organization's operations. One of the most widely used forms of digital transformation today is the implementation of information systems. Among the most critical information systems in an organization is the correspondence management system. Incoming and outgoing mail are dynamic data that serve as authentic evidence of an organization's communication flow. An incoming and outgoing mail management system can speed up document retrieval and ensure that mail distribution can be monitored in *real time.*

The correspondence archiving information system is used to facilitate the processing of incoming and outgoing correspondence, thereby assisting system users in searching for data and generating reports on incoming correspondence and outgoing correspondence [1]. Currently, the Jambi City Inspectorate Office still manages incoming and outgoing mail manually by recording each incoming and outgoing letter in a logbook. The current system poses several challenges, such as difficulty in searching for correspondence data, the risk of losing physical letters, and the inefficiency of managing incoming and outgoing mail. Improper mail management leads to inaccurate distribution[2] , the risk that lost letters cannot be recovered[3] , the need to sift through entire stacks of mail[4] , and the daily increase in the volume of mail. Manual archiving has many drawbacks[5] , namely the need for significant space and storage facilities.

In a previous study authored by Dea Arius Titania, Laela Kurniawati, and Tuti Haryanti titled "Designing the UI/UX of a Document Archiving Information System Using the *User-Centered Design* Method." This study aims to design the user interface (UI) and user experience (UX) for an electronic document management system at SMK Texmaco Purwasari using the *User-Centered Design* (UCD) method, as well as to evaluate its usability using the *System Usability Scale* (SUS) method. The primary issue is that document archiving at SMK Texmaco Purwasari is still conducted manually in paper form *(hard copy)*, leading to administrative inefficiencies, the risk of document loss, and a significant need for storage space. The results of *the prototype* research on the archival information system included key features such as login, incoming/outgoing letter information, letter printing, letter number verification, and letter summarization. Testing using the SUS method on 20 respondents yielded an average score of 62.25. This score falls into the "Marginal" category in terms of quality (adjective "OK") and into the *"Acceptable"* category, meaning users did not experience significant difficulty in operating the application[6] .

The next research paper, written by Farah Salsabilla Aulia Rahmah, is titled "UI/UX Design of a Letter Archiving System Using Figma at the Banyuwangi Education Office." The objective of this research is to design an effective and efficient letter archiving information system interface to assist with document management at the Banyuwangi Regency Education Office Branch. The main issue with the current letter archiving system is that it is still managed manually, making it inefficient, potentially slowing down administrative services, and complicating the process of locating documents when needed. The design resulted in a prototype of a letter archive information system featuring management of incoming and outgoing letters, letter disposition, and archive categories. This design focuses on ease of navigation so that administrative staff can manage document data in a more structured manner. The use of the *prototyping* method and Figma tools

enables the development of a system that aligns with real-world needs in the field. This system is expected to minimize the risk of document loss and accelerate the time required to retrieve archives[7] .

Based on the above description, an information system is needed to manage correspondence data at the Jambi City Inspectorate Office so that the challenges faced by the current system can be minimized. The author will design the UI/UX (*User Interface/User Experience) of* the incoming and outgoing correspondence information system using the design thinking method to produce an information system that meets user needs and *is user-friendly.*

The *Design Thinking* method is a method for solving a problem based on solutions that focus solely on the experience of users, which is iterative. In the method used , there are five stages : *Empathize, Define, Ideate, Prototype, and Test*[8] .

2. Research Methodology

The research methodology outlines the steps taken in this study. The research steps are illustrated in Figure 1 below:

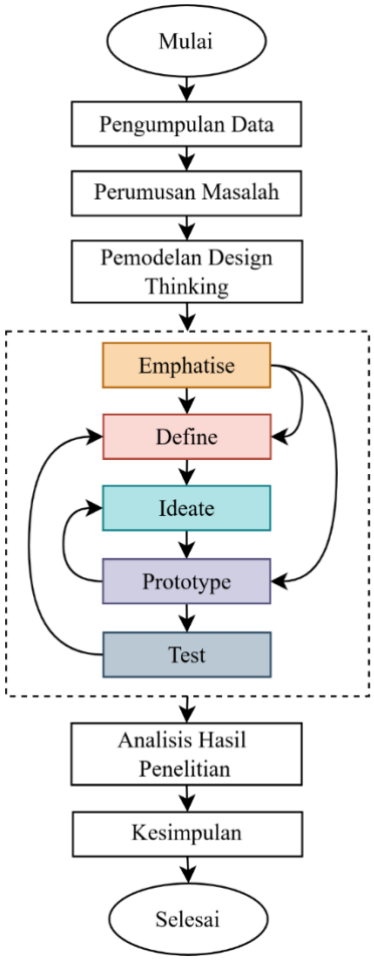

Fig. 1: Research Stages

The research stages can be explained as follows:

1. Data Collection

This is the initial stage for obtaining accurate information to achieve the research objectives. Data collection is conducted through the following methods:

a. Observation: Conducting direct observations in the field to see how current work processes are carried out.
b. Interviews: Discussing with stakeholders (administrative staff, department heads) to gain a deep understanding of the challenges they face.
c. Literature Review: Gathering theories and references from journals, books, or previous documents relevant to the topic (for example, searching for theories on Design Thinking or prototyping methods).

2. Problem Formulation

At this stage, research is conducted to identify relevant and significant problems in the context of the letter archiving application and to identify the weaknesses of the existing system. Through an understanding of the situation, the data collected, and the analysis performed, the problems that arise in the use of the letter archiving application can be clearly identified, and solutions to these archiving issues can be found.

3. Design Thinking Method

In this phase, the user interface and user experience were designed using the Design Thinking method. This approach was chosen because of its human-centered focus, ensuring that the resulting digital solutions truly align with the needs of users at the Jambi City Inspectorate. This study follows the five stages of Design Thinking as developed by Stanford's d.school: *empathize, define, ideate, prototype, and test*[9] .

4. Analysis of Research Results

This stage involves analyzing the collected and validated data to determine whether the developed solution is effective. It involves identifying the required features based on the initial data (such as the system's functional requirements). The product (such as the UI/UX design) is then tested with users. The test results are quantified using the *System Usability Scale (SUS)* score, and the meaning of these numbers or test results is explained.

5. Conclusion

This is the concluding section that addresses the entire research process, briefly stating whether the research objectives were achieved, explaining the benefits of the research for the organization or the field of knowledge, and providing recommendations for future research so that the shortcomings identified during the analysis phase can be addressed in the future.

3. Results and Discussion

3.1 Design Thinking Analysis

The following is a discussion of the analysis and design of the Design Thinking method:

1. Empathize

In this stage, emphasis is placed on a process of empathetic understanding of the issues to be resolved, through observation or interviews. Interviews were conducted with staff responsible for managing correspondence at the Jambi City Inspectorate Office.

Based on the results of the interviews, the following perspectives of the staff as users of the web-based incoming and outgoing mail information system were obtained:

a. Staff need a system that processes correspondence data digitally to facilitate their work.
b. Staff need an information system that is easy to use (*user-friendly).*
c. The current system poses many challenges in managing correspondence.

2. Define

The Define phase is the process of gathering user feedback and understanding user needs. Here are the details of user requirements for the incoming and outgoing mail information system:

a. Requires a *user-friendly* information system capable of managing correspondence data.
b. The system must be able to display the document's details during the search process.
c. The system can generate periodic reports on incoming and outgoing mail.
d. The system has a disposition feature, so that incoming and outgoing mail can be easily tracked during the distribution process.

3. Ideate

In this ideation phase, the design process for the proposed solution from involves various ideas that have been gathered. The ideation phase in this study resulted in a *sitemap* and *user flow* diagram. A *sitemap* is a clear outline of a website's design and knowledge architecture, making it the foundation of the site[10] . During the design phase of an application or *website, a sitemap* plays a crucial role in establishing navigation paths that are easy for users to understand. With *a sitemap*, developers can organize the page structure in a systematic way, ensuring that all features and content can be accessed quickly and efficiently[11] .

A user flow is the sequence of steps a user takes within a system or application to complete a task. *A user flow* is a diagram that illustrates the user's journey when accessing[12] . The purpose of *a user flow* is to help designers plan the steps before creating a website interface design and to avoid overly complex navigation, thereby making it easier for users[13] . Below is a solution featuring the *sitemap* design in Figure 2 and *the user flow* in Figure 3:

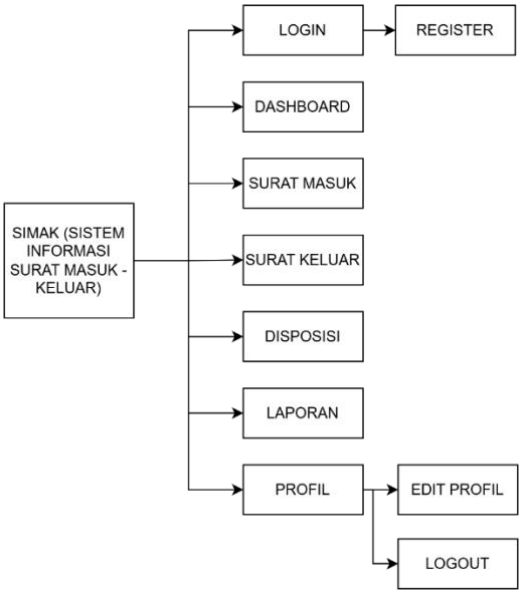

Fig. 2: *Sitemap*

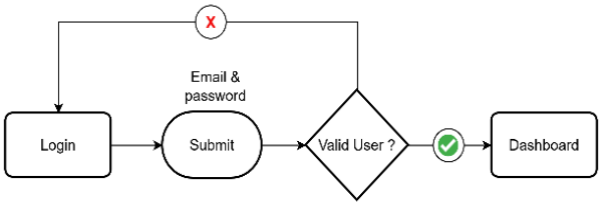

Fig. 3: Login User Flow

4. Prototype

During the prototyping phase, the design process and the interface of a web-based information system for incoming and outgoing mail were carried out. The tool used to create the design for this web-based information system was Figma. This process began with the creation of sketches for each page or section of the website, presented in the form of low-fidelity wireframes.

When creating *low-fidelity wireframes*, the visual design of each component is clearly defined, such as *buttons*, text, menus, *images*, and others. Figure 4 shows the wireframe for the *Login* page on the Incoming and Outgoing Mail Information System (SIMAK) website, which displays the *username* and *password* fields. The following is the information system design that has been created:

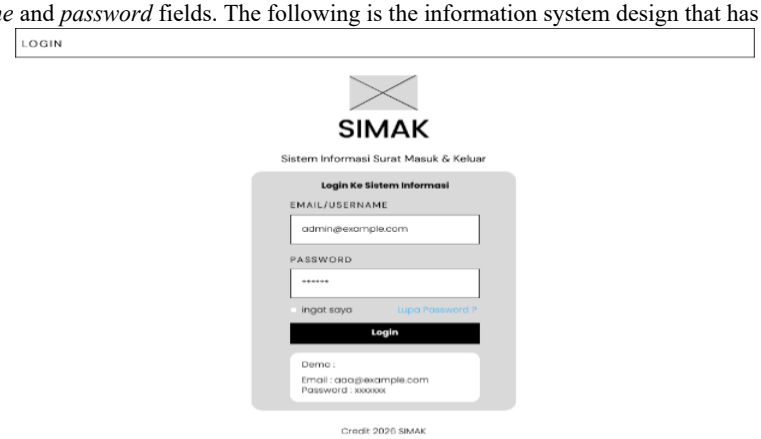

Fig. 4: Low-fi Wireframe of the Login Page

Figure 5 shows *the low-fi wireframe* of the admin menu. This wireframe features a *Dashboard* menu displaying a navigation panel (on the left) with the main menu for operating the system; the center section (main statistics) displays a summary of incoming and outgoing emails; below the statistics are details of the latest incoming emails; and the quick-action panel contains a menu with large buttons to streamline routine tasks.

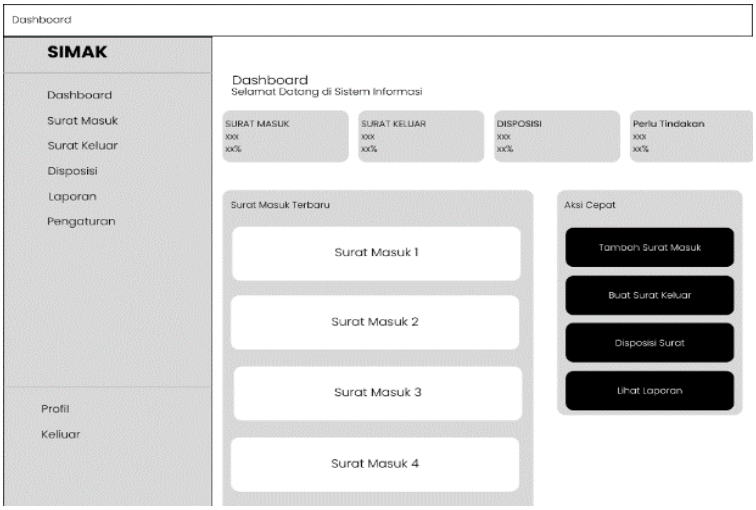

Fig. 5: Low-fi wireframe of the Dashboard Page

Figure 6 shows *a low-fi wireframe* of the admin menu. This wireframe includes an inbox menu featuring a navigation panel (on the left) that displays the main menu for operating the system, while the right side shows a table view presenting detailed information about the list of received emails.

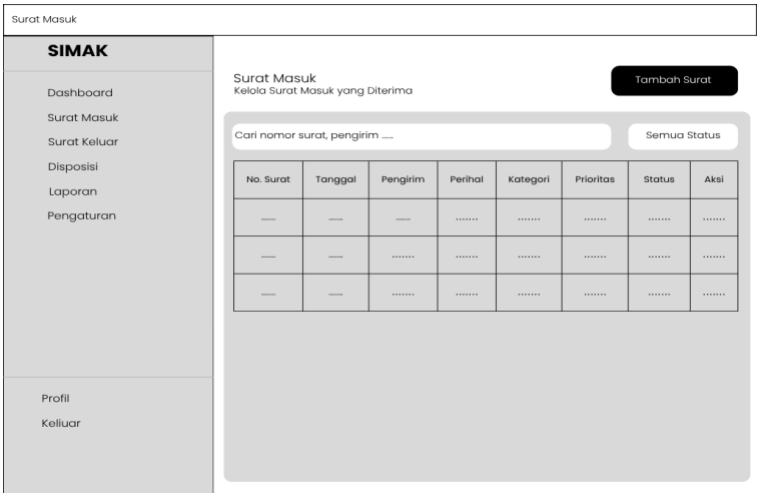

Fig. 6: Low-fi Wireframe of the Inbox Page

The next step is interface design. Figure 7 shows the *login* menu design; users can *log in* according to their assigned access rights. The login design includes *text boxes* for entering *a username* and *password*. *The username* and *password* entered when accessing the system must match.

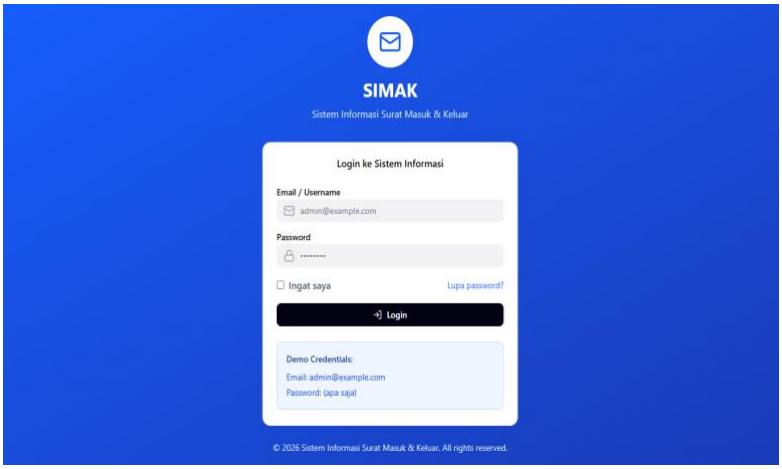

Fig. 7: Login Page

Figure 8 shows the user's main menu form; users have access to incoming and outgoing mail. To access the *dashboard* page, *users* must first *log in*. The *dashboard* page displays the main menus within the incoming and outgoing mail information system, ranging from the incoming mail menu to the outgoing mail menu.

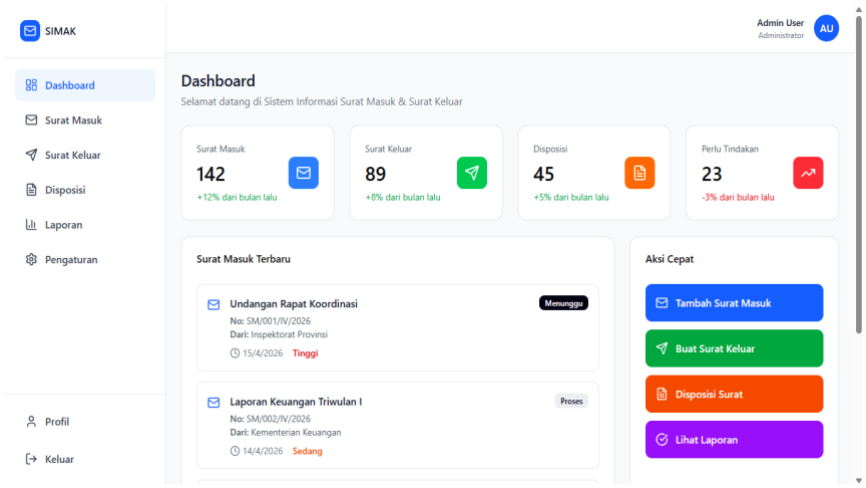

Fig. 8: Dashboard Page

Figure 9 shows the design of the Inbox menu. In this menu, *users* can check their inbox and view the status of each message—whether it has been processed or is still pending and can add any incoming messages they receive at that moment.

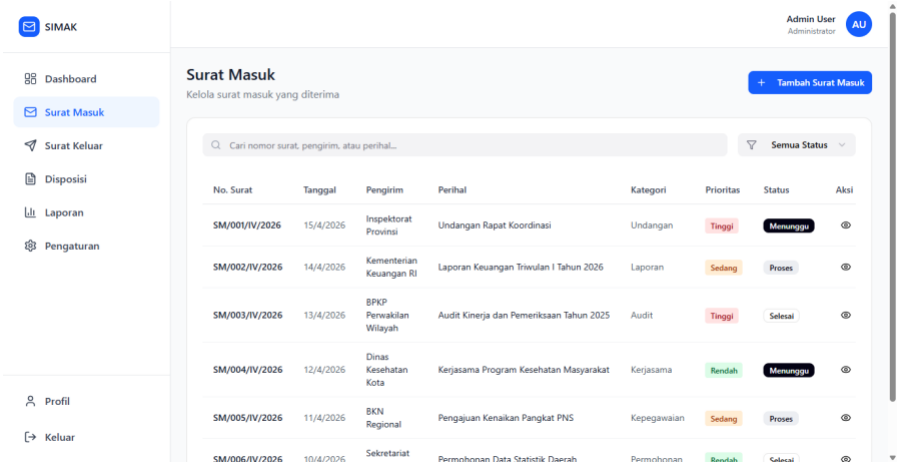

Fig. 9: Inbox Page

Figure 10 shows the design of the outbox menu. In this menu, *users* can check outgoing messages and view their statuses—whether they have been sent or are still in draft form—and can add outgoing messages to be sent immediately.

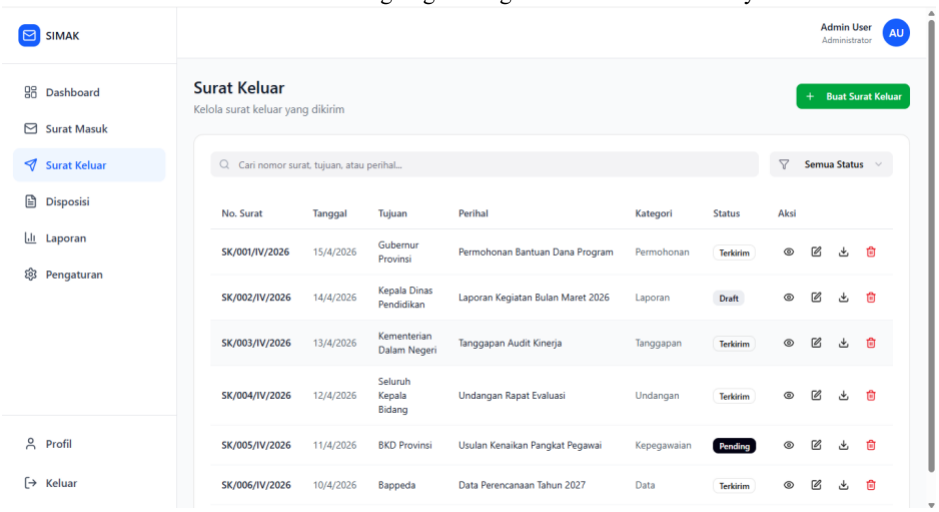

Fig. 10: Outgoing Mail Page

5. Test

This stage is the final step after the UI/UX design has been completed. It involves assessing and evaluating the UI/UX design results. Testing was conducted using the SUS (*System Usability Scale)* method via Google Forms. The Google Forms were completed by several participants. The results of the SUS testing are shown in the following table:

Table 1. SUS Testing Results

Respondent	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	SUS Score
R1	4	1	5	1	4	2	5	1	4	1	90
R2	5	2	4	1	5	1	4	2	5	1	90
R3	4	1	4	2	4	1	5	1	4	2	85
R4	5	1	5	1	5	2	5	1	5	1	97.5
R5	4	2	4	2	4	2	4	2	4	2	75
R6	5	1	5	1	4	1	5	1	5	1	97.5
R7	4	2	4	1	5	2	4	1	4	2	82.5
R8	4	1	5	2	4	1	5	2	4	1	87.5
R9	5	1	5	1	5	1	5	1	5	1	100
R10	5	2	4	1	5	1	5	1	5	2	92.5
AVERAGE											**89.75**

Based on calculations using the System Usability Scale (SUS) formula, the SIMAK app design received a final score of 89.75. This score falls within the *ACCEPTABLE* category on *the acceptability scale* and is rated *GOOD* on *the adjective rating scale*. With this score, it can be concluded that the app's design has a high level of usability and is already capable of providing a sufficiently satisfying experience for its users. This score also indicates that the features and user flow within the application are considered easy to understand and effectively support user needs.

4.Conclusion

Based on the research results and discussion, it can be concluded that:

1. The application of the *Design Thinking* method successfully produced a UI/UX design for a document management system that meets the needs of staff at the Jambi City Inspectorate.
2. The key features designed, such as document identification search, disposition features for tracking distribution, and periodic report generation, have addressed the challenges of the previous manual management system.
3. Testing results, with a SUS score of 89.75, demonstrate that the SIMAK application design offers high usability, is effective, and provides a satisfying user experience.

5.Recommendations

Based on the analysis of the research results, here are several recommendations for further development:

1. **System Development:** It is hoped that the results of this UI/UX design can proceed to the system development (*coding*) phase so that it can be implemented in practice at the Jambi City Inspectorate Office.
2. **Feature Additions:** Further research could incorporate advanced security features such as digital signatures or integration with *real-time* notification systems to expedite the disposition process.
3. **Ongoing Evaluation:** Periodic retesting is necessary after the application is fully operational to adjust the design to future changes in user needs.

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