Requirement Analysis and Solutions for Incoming and Outgoing Mail System for Local Water Company in Palembang, Indonesia

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Abstract

Requirements analysis (requirements engineering) is the process of determining user expectations for a new or modified product. It is usually a team effort and demands a variety of human soft skills, such as critical thinking, communication, and judgment. The research that we carried out is about email communication that needs to be established in a local water company namely PDAM Tirta Musi Palembang due to the lack of a fast, low-cost, accessible platform of communication in the company. Email communication or correspondence is essential because they are a reliable, valid, and authentic source of information This research aims to determine the requirement analysis and solutions in the form of procedures for managing incoming and outgoing mail at a local water company, namely PDAM Tirta Musi Palembang. The method that we used was descriptive observation and analysis, data collection techniques carried out by interviews, observation, and documentation review. Our study shows that the solutions to the current problem can be reduced by developing an incoming and outgoing email management system. Based on the user evaluation results, the perspective of usability and security of this system is necessary.

Keywords

Requirement Analysis, Incoming and Outgoing Mail, System Application

Introduction

Developments in this modern era are inseparable from information and communication technology advances. As time goes by, it changes various aspects of life (Singh, 2021). Available technology is essential in transferring information from one place to another in a short time. Oral and written interactions currently occur without having to meet with two or more parties directly to communicate (Prabavathi & Nagasubramani, 2018).

There are many ways of communicating to cooperate with outsiders to achieve company goals. Correspondence must exist in large and small companies (Amiri, 2015). Correspondence duties include handling incoming mail, which provides for collecting and classifying mail and scheduling and distributing them. Managing outgoing mail includes drafting mail, typing mail, assigning mail numbers, validating mail, scheduling, expediting, and sending mail. So,

correspondence activities must get attention in a company or institution. Given the critical role of mail, it is necessary to have procedures for managing mail (Nikmah et al., 2023).

Mail is a communication tool for conveying information in writing from one party to another. The information obtained can be in the form of notifications, statements, questions, requests, reports, thoughts, objections, criticisms, etc. If a mail receives an answer or reply, a correspondence relationship occurs, often called correspondence. Correspondence is critical in an organization, whether small, medium, or large. The mail serves as a means of written information regarding a specific matter in a clear and written manner and must be detailed. Mail as a means of communication can achieve its goals (Sari & Fadilah, 2023).

The process of managing mail in PDAM Tirta Musi Palembang is composing mail using three systems, namely the agenda book system, disposition sheet, and register book. It is done manually, writing and delivering to the recipient until the mail is received and signed by the recipient. The archiving process is carried out after going through the mail administration process. The archive's function is to find archives quickly, which can be a problem if the archiving process is incorrect.

Methodology

System Development Methodology at Figure 1 is a method used to develop computer-based information systems. In making this system, the author used the waterfall system development method. The Waterfall method is a sequential software development process where progress is seen as continuously flowing downward (waterfall) through the phases of planning, modeling, implementation (construction), and testing (BAHAR et al., 2015).
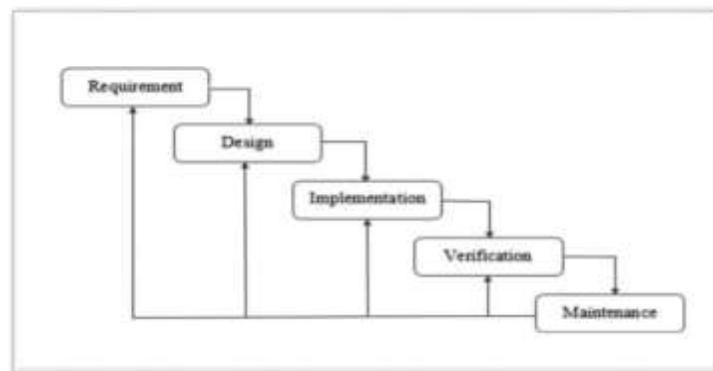

Figure 1.   Waterfall Method

Data Collection Methods
Some of the methods used by the author at the time of data collection are as follows (Kabir, 2016):
  a. Observation method, namely by observing the activities carried out during the author's activities in the field.
  b. The interview method seeks information by conducting interviews with the company.
  c. The library method is the method of finding sources from company data and the internet.

Modeling
The next stage is the stage after the system analysis, which provides a clear picture of what was done in the system analysis (McSweeney, 2019).

Use Case Diagram
A use case is a notion that describes how a system might be used to accomplish tasks or goals. It is used in software development, product design, and related industries. It explains how users or actors engage with the system to accomplish a particular goal (Bano et al., 2017).

We'll delve into the specifics of use cases in software development, including their advantages and applications. Along with discussing typical use case kinds, we'll offer some advice on how to write use cases that work. Figure 2 depicts the use case diagram used in this study.
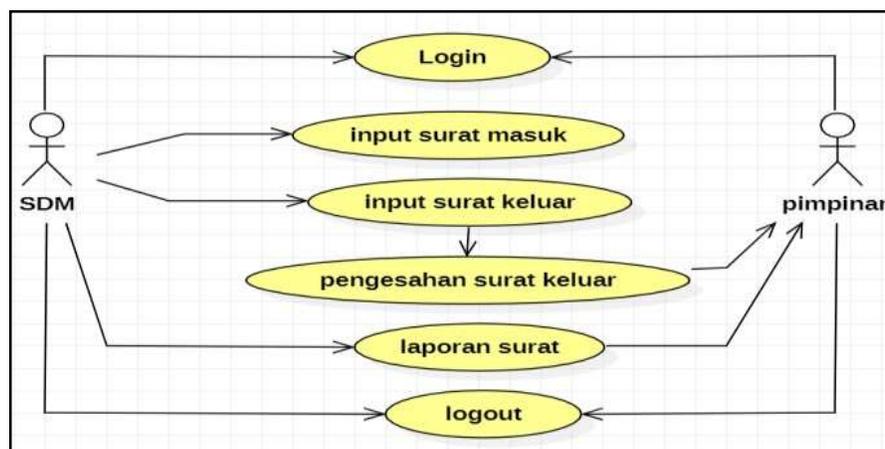

Figure 2. Use Case Diagram

Class Diagram
A class diagram in software engineering is a static structure diagram showing the classes, attributes, operations (or methods), and interactions between objects in a system. It is created in Figure 3using the Unified Modeling Language (UML) (Nikiforova et al., 2011).

The fundamental component of object-oriented modeling is the class diagram. It is used for precise modeling, which converts the models into computer code, and general conceptual modeling of the application's structure. Data modeling is another application for class diagrams. In a class diagram, the classes are the classes that must be programmed and the application's essential components and interactions.
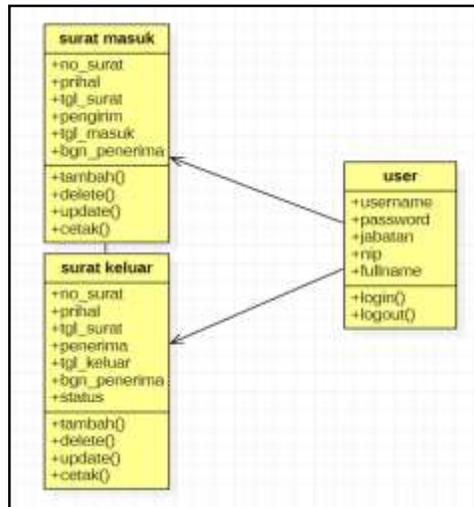
Figure 3. Class Diagram

Results and Discussion

Results

The results achieved from this study are an application of web-based incoming and outgoing mail processing applications at PDAM Tirta Musi Palembang using the PHP programming language. The existence of this application is to facilitate the processing of mail data at PDAM Tirta Musi Palembang

Discussion

At this stage, several user interfaces for the Application for Processing Incoming and Outgoing mail are displayed at PDAM Tirta Musi Palembang, with the following results:

Login Page
This page is displayed at Figure 4 when administrators and leaders enter the application using a username and password.

Figure 4. Login page

Main Menu page
This page is displayed after administrators and leaders have successfully logged in a seen in Figure 5.
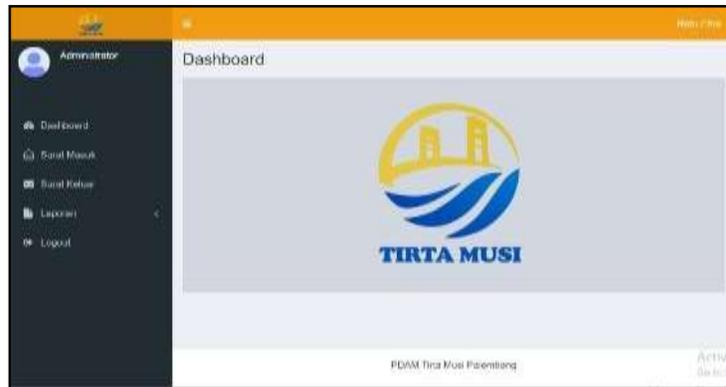

Figure 5. Main Menu Page

Incoming Mail Data Page
To display this page like it is shown in Figure 6, the administrator clicks incoming mail. The page also has buttons for adding, editing and deleting data. The incoming mail page can view photos of mail or mail files to make it easier for admins to check mail.
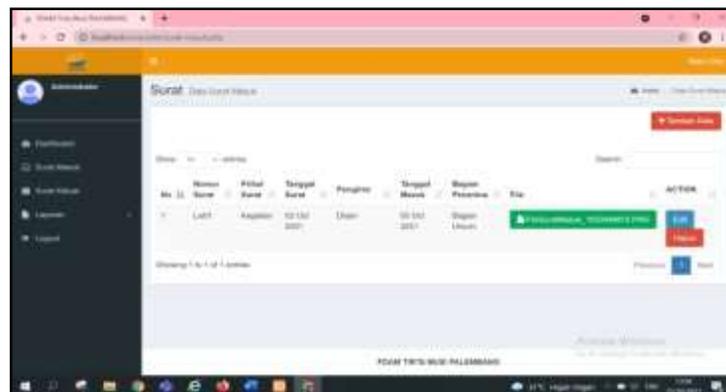

Figure 6. Incoming Mail Page

Add Inbox page
To display this page like it is seen in Figure 7, the administrator clicks on incoming mail and then clicks the plus button. Administrators use this page to add incoming mail.
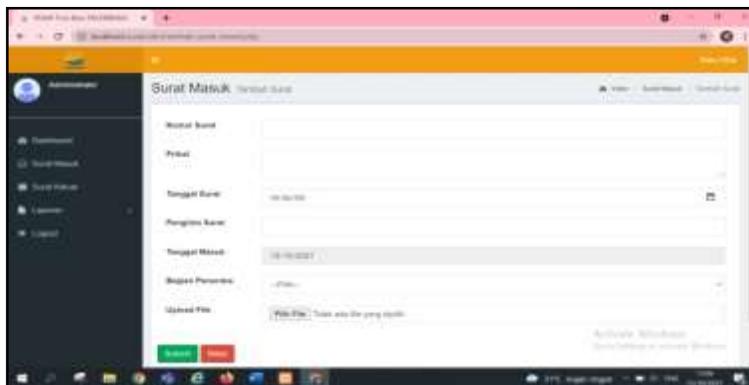
Figure 7. Add Inbox page

Pages for Uploading Incoming Mail Files
To display this page like it is seen in Figure 8, the administrator clicks incoming mail. Administrators use this page to add files to incoming mail.
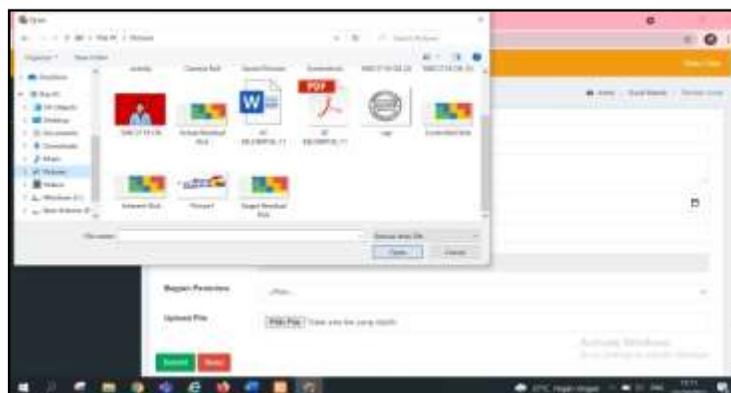

Figure 8. Incoming Mail Upload Page

Incoming Mail Photo Upload Page
To display this page like it is seen in Figure 9, the administrator clicks incoming mail. The administrator uses this page to view incoming mail files uploaded.
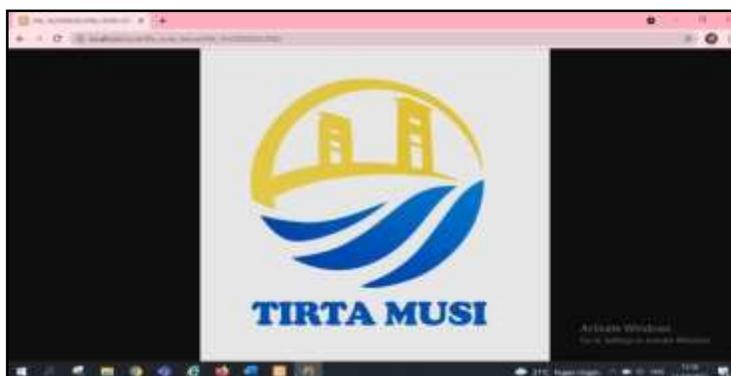

Figure 9. Incoming Mail Photo Upload Page

Outgoing Mail Page
To display this page like it is seen in Figure 10, the administrator clicks outgoing mail. The page also has buttons for adding, editing and deleting data, photos of mail, and status of mail.
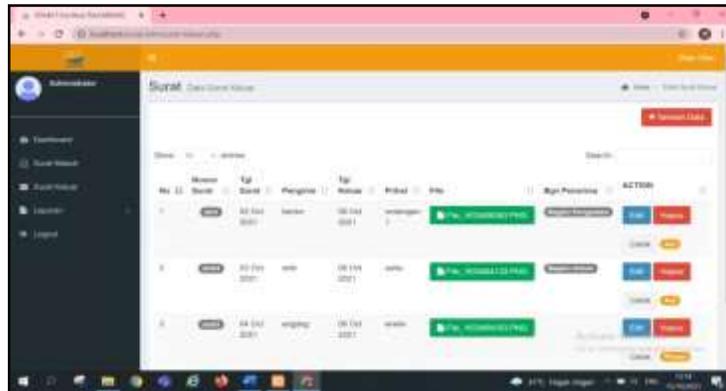

Figure 10. Outgoing Mail Page

Add Outgoing Mail page
To display this page like it is seen in Figure 11, the administrator clicks outgoing mail after clicking the plus button. Administrators use this page to add outgoing mail.
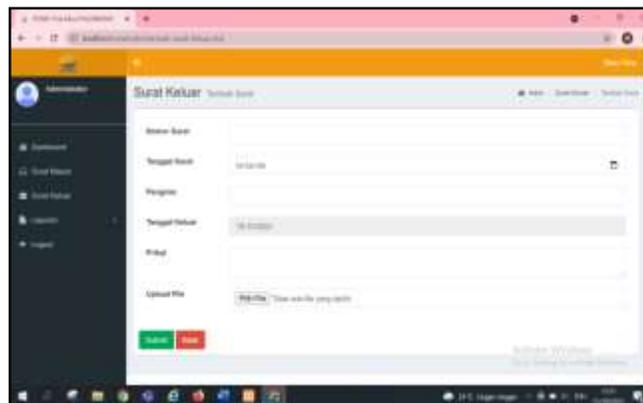

Figure 11. Add Outgoing Mail page

Outgoing Mail File Upload Page
To display this page like it is seen in Figure 12, the administrator clicks outgoing mail. Administrators use this page to add files to outgoing mail.
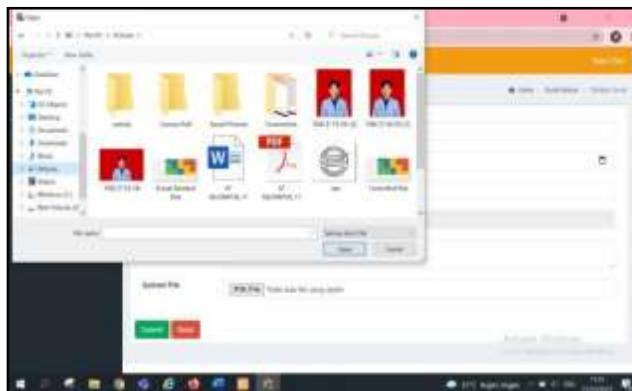
Figure 12. Outgoing Mail File Upload Page

Incoming Mail Report Page
To display this page like it is seen in Figure 13, the administrator clicks on the Reports menu and selects the incoming mail menu.
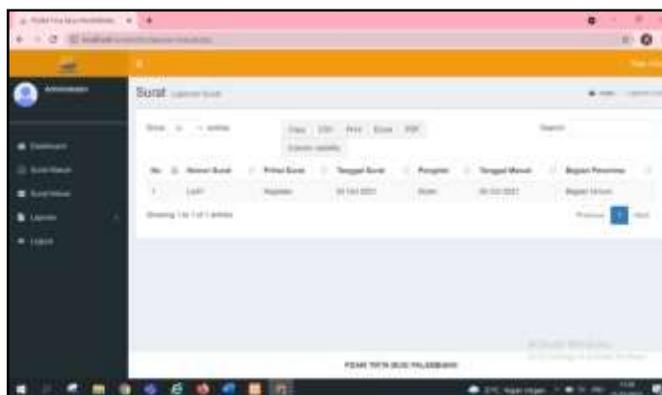

Figure 13. Incoming Mail Report Page

Outgoing Mail Report Page
To display this page like it is seen in Figure 14, the administrator clicks on the Report menu and selects the Outgoing Mail menu.
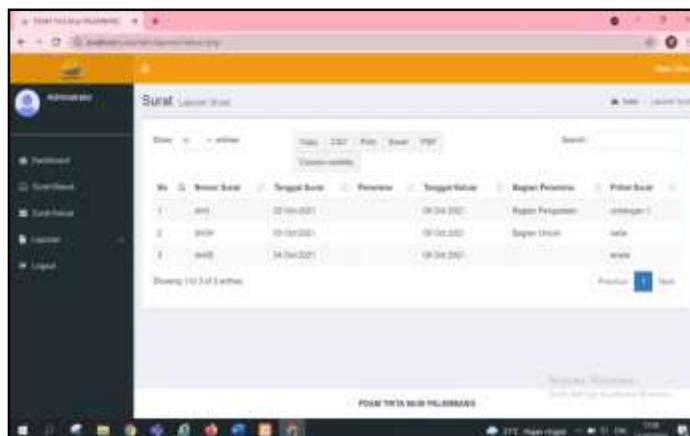

Figure 14. Outgoing Mail Report Page

Conclusion

The lack of a fast, low-cost, accessible platform of communication in the company as a result of our findings led to a solution to develop system management to tackle the incoming and outgoing emails at PDAM Tirta Musi Palembang. This prompted the development of system management to handle incoming and outgoing emails at PDAM Tirta Musi Palembang. The goal of this solution is to expedite and simplify email processing, making it easy and rapid. The fact that the files gathered and produced extensive data searches during the first testing suggests that there is still not enough storage for both incoming and outgoing messages. With requirement analysis and application, the system can find emails and data quickly. Additionally, data is preserved and assured of existence.

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