

Design of a Web-Based Information System for Incoming and Outgoing Mail Archiving Using the Waterfall Method in Kambata Tana Village East Sumba

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Abstract

Letters are one of the most important communication media in institutions, companies, or other forms of organizations, used to communicate with external and internal parties. Everything related to organizational activities is always expressed in the form of letters. Kambata Tana Village Office is a government institution responsible for upholding government authority. In carrying out its duties, the office is heavily involved in communication. Currently, there are several obstacles in the submission of letters, for example, not all letters are well archived and are often lost, which need to be followed up by the responsible party. The purpose of this research is to design and develop an information system for archiving incoming and outgoing correspondence at Kambata Tana Village Office, thus facilitating village officials in processing and archiving incoming and outgoing letter data so that the required letters can be found more quickly and support the smooth running of village officials' activities. The research method used is the waterfall method with the following development steps: data collection, analysis, information system development, and testing.

Keywords: Archiving, Incoming Mail, Outgoing Mail, Information System, Waterfall.

1. Introduction

To address these issues, the researcher will design a Web-based Document Archiving Information System. This system will assist village officials in processing and archiving document data, allowing for faster retrieval of needed documents and supporting the smooth operation of village activities [1]. The research problem to be addressed is as follows: the recording of incoming and outgoing correspondence is currently done manually using a logbook, making it time-consuming to find files [2]. Additionally, storing documents in hardcopy format increases the risk of losing documents. Another problem is the difficulty in finding documents, leading to delays due to poor document management [3]. To address these problems, there is a need to design an information system for archiving incoming and outgoing document data at the Kambata Tana Village Office [4]. In this research, the researcher will limit the scope of the information system. Specifically, the system will be designed for use by the secretary, and the discussion will cover system design, implementation (prototype), and local application design [5]. The objective of this research is to design and develop an information system for archiving incoming and outgoing document data at the Kambata Tana Village Office using the waterfall method to assist the researcher in building a system. With this system, village officials will be able to process and archive document data more easily, allowing for faster retrieval of needed documents and supporting the smooth operation of village activities [6]. To address these issues, the researcher will design a Web-based Document Archiving Information System. This system will assist village officials in processing and archiving document data, allowing for faster retrieval of needed documents and supporting the smooth operation of village activities [7]. The research problem to be addressed is as follows: the recording of incoming and outgoing correspondence is currently done manually using a logbook, making it time-consuming to find files [8]. Additionally, storing documents in hardcopy format increases the risk of losing documents. Another problem is the difficulty in finding documents, leading to delays due to poor document management. Therefore, there is a need to design an information system for archiving incoming and outgoing document data at the Kambata Tana Village Office [9]. In this research, the researcher will limit the scope of the information system [10]. Specifically, the system will be designed for use by the secretary, and the discussion will cover system design, implementation (prototype), and local application design. The objective of this research is to design and develop an information system for archiving incoming and outgoing document data at the Kambata Tana Village Office using the waterfall method to assist the researcher in building a system [11]. With this system, village officials will be able to process and archive document data more easily, allowing for faster retrieval of needed documents and supporting the smooth operation of village activities

Information System for Document Management in the BRI City Padang Inspection Office," supports this research. The aim of that study was to develop an information system for managing document archives to facilitate operations at the BRI City Padang Inspection Office. The research employed the System Development Life Cycle (SDLC) methodology, commonly known as the waterfall method, and used

object-oriented programming languages. The results showed that the developed system made it easier to search for incoming and outgoing document data at the BRI City Padang Inspection Office. By implementing a database system for data storage, it also facilitated the creation of necessary reports. Additionally, the document archiving application system provided timely and accurate information to the BRI City Padang Inspection Office, which could be used as a basis for decision-making. Web-Based Document Archiving Information System at the Notary Office of Efrina Nofiyanti Kayadu, SH., M.Kn Using the Waterfall Method," is also relevant. The aim of this study was to create a web-based information system for document archiving to help companies or institutions improve the effectiveness of data processing and reduce the likelihood of errors, ensuring the security of archives, especially for storage and retrieval. The study involved designing a document archiving information system at the notary office using Notepad++ and PHP MySQL databases. Data collection techniques used included observation, interviews, and literature review. The Waterfall method was employed. The results showed that implementing a document archiving information system in data processing can help improve the efficiency and effectiveness of village officials and notaries. Analysis and Design of a Web-Based Document Archiving Information System at the Village Head Office of Dayah Tuha Village," is also relevant. The aim of this study was to design a web-based document archiving information system that suits the needs of the Dayah Tuha Village Head Office. This web-based document archiving information system is expected to improve performance, accelerate the archiving process, and ensure that the archives are stored safely and securely. The study involved designing the information system using use case diagrams, activity diagrams, and sequence diagrams. The results showed that implementing a document archiving information system in data processing can help improve the efficiency and effectiveness of village officials and notaries.

This research employs the Waterfall methodology. The Waterfall method is a sequential development process where progress flows downward, like a waterfall. The waterfall method provides a sequential software development lifecycle approach, starting with analysis, design, implementation, testing, and maintenance. This research follows a specific flow to ensure a well-structured research process in accordance with the chosen methodology. The analysis phase involves conducting a system analysis and data collection based on the needs of Kambata Tana Village, Pandawai District, East Sumba Regency. These needs include information retrieval, processing of population data and administrative records, software for application development, and the required computer hardware. In this phase, the information system is designed by illustrating the system workflow using UML (Unified Modeling Language) with the aid of the draw.io software, which will produce use case diagrams, activity diagrams, sequence diagrams, and class diagrams. In this phase, the programming code is created to produce the software using the PHP programming language and JavaScript for the back-end, and the Bootstrap framework is used to create the front-end interface. Additionally, the database is implemented using XAMPP as a local web server with MySQL as the database. This process is carried out when the information system has been developed and will be tested to verify whether the implemented functions or features meet the user's needs. In this phase, black box testing is used to demonstrate the success of the developed information system. In this stage, the system is identified and determined to be suitable for user needs, but additional features or functions can be added to the software in the future. In this phase, the researcher conducted in-depth interviews with one of the document management officers at the Kambata Tana Village Office. The researcher asked several questions regarding the process of managing incoming and outgoing correspondence and document archiving. In this phase, direct observations were conducted at the Kambata Tana Village Office regarding the management of incoming and outgoing correspondence. Each incoming and outgoing letter is recorded or logged in a ledger. Each incoming and outgoing letter is archived using cabinets and large folders that have been prepared.

2. Page layout

Kambata Tana Village is one of the villages located in Pandawai District, East Sumba Regency, East Nusa Tenggara. This village has significant natural resource potential, especially in the agricultural sector. The people of Kambata Tana generally rely on agriculture for their livelihood, with major commodities such as food crops and horticulture. Besides agriculture, the village also has attractive natural tourism potential. In terms of social culture, the people of Kambata Tana have a rich and unique set of customs, particularly in death rituals. However, the village also faces several challenges, such as the need to improve road access and other infrastructure limitations. The village's potential is vast but requires the support of appropriate and sustainable development programs. This research employs the Waterfall methodology. The Waterfall method is a sequential development process where progress is viewed as flowing downward (like a waterfall). The waterfall method provides a sequential software development life cycle approach, starting with analysis, design, implementation, testing, and maintenance. This research has a flow in conducting research that serves to make the research process well-organized according to the research method used.

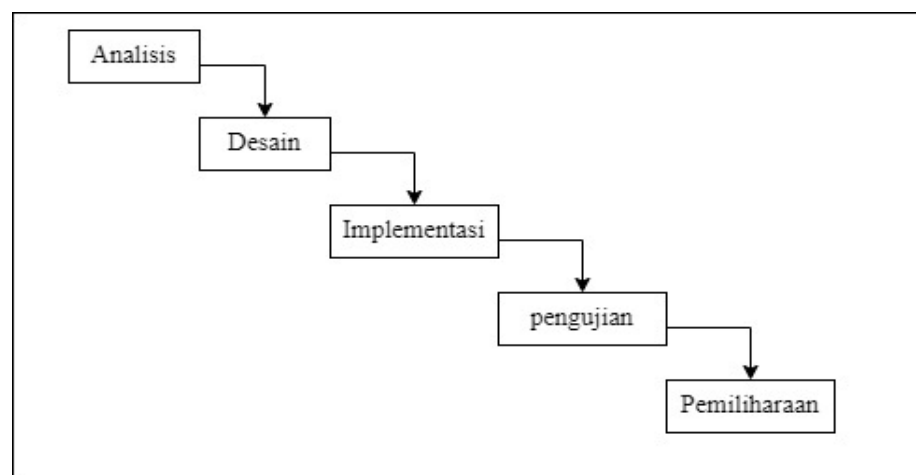


Fig.1: Research Flow

3. Page style

The digital archiving system implemented in Kambata Tana Village is aimed at streamlining the management of crucial village documents. This system enhances the efficiency of data input, retrieval, and storage processes. All document data is stored in a structured and secure database, ensuring easy accessibility and minimizing the risk of data loss. Moreover, the system generates accurate and timely reports, supporting informed decision-making within the village governance. The adoption of a computer-based archiving system in Kambata Tana Village has successfully established a centralized repository for various village documents. Equipped with advanced search functionalities, the system empowers users to locate required documents effortlessly. Furthermore, robust security measures are in place to safeguard data from unauthorized access. This system is anticipated to enhance the efficiency of village officials and streamline public service delivery. The introduction of the digital archiving system marks Kambata Tana Village's entry into the digital age. Beyond facilitating document management, this system promotes transparency and accountability in village governance. The public can now conveniently access the information they need, while village officials can work more effectively and efficiently. Consequently, the system contributes to a marked improvement in the quality of public services provided by Kambata Tana Village.

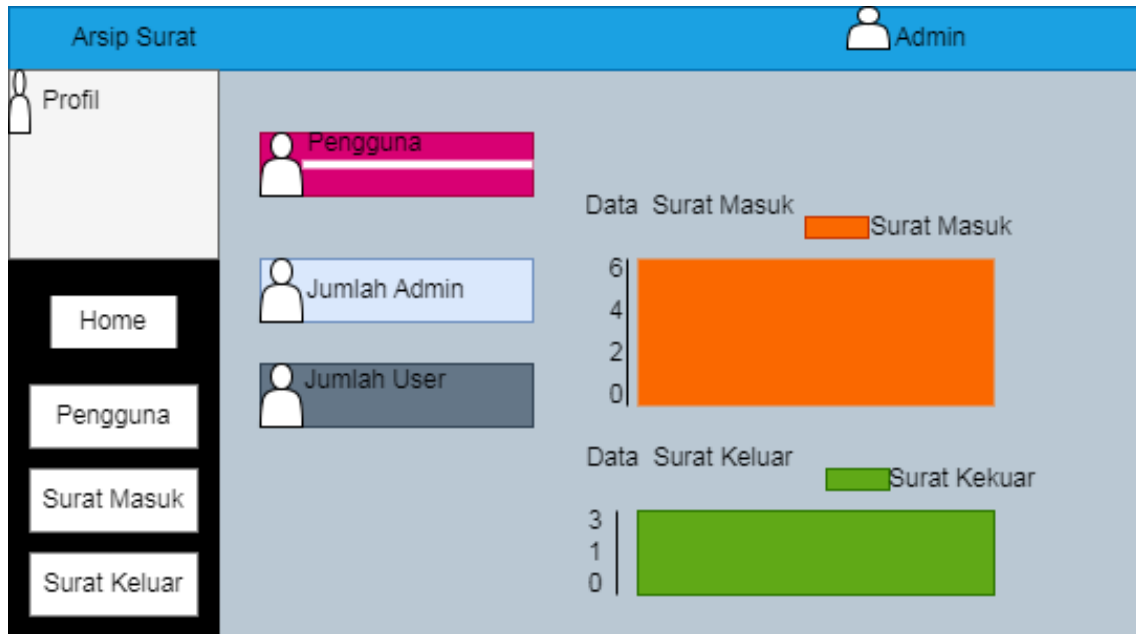


Fig.2: Design Home

Upon successful authentication, users will be redirected to the main dashboard. The dashboard provides a concise overview of correspondence activities, including the total number of users and statistics on incoming and outgoing mail. To input incoming correspondence, users are required to complete a provided form with details such as letter number, date, sender, and subject matter. Furthermore, users have the option to attach relevant files to the correspondence. Once the data has been entered, users can save the record within the system. A similar process is applicable for inputting outgoing correspondence. Users can perform create, read, update, and delete operations on both incoming and outgoing mail data through the system's built-in CRUD functionalities.

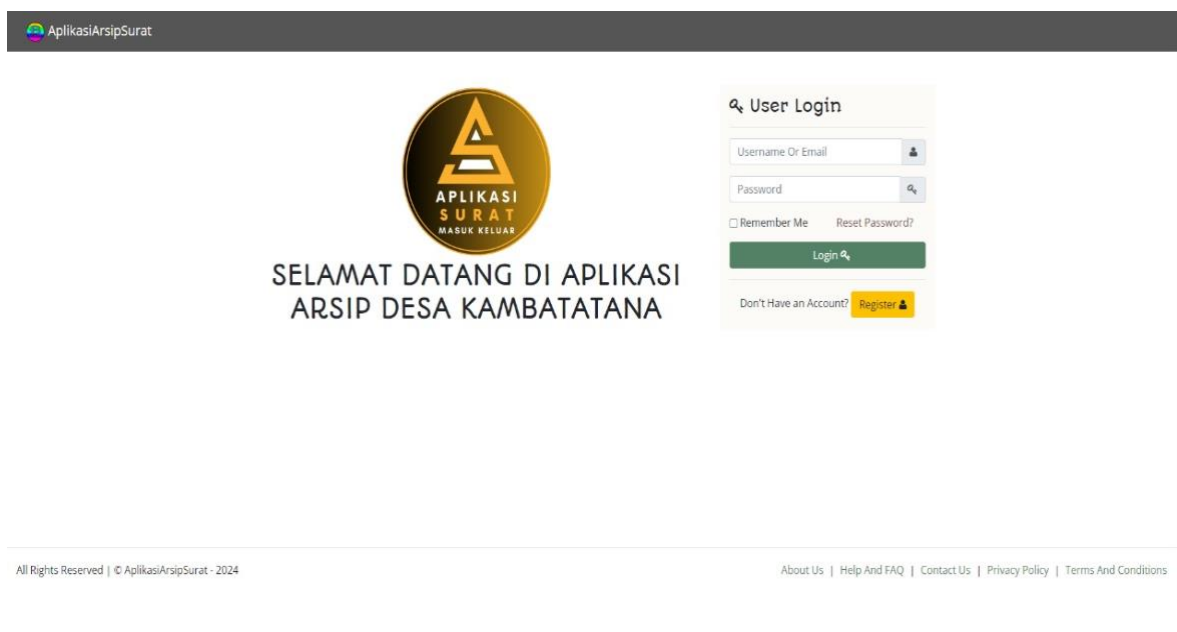


Fig.3: Login

This system is designed to provide flexibility in managing correspondence. Users can easily navigate between various views, such as the inbox, outbox, and new letter creation form. Intuitive features like search, filter, and reporting allow users to track and manage correspondence efficiently. Whether it's formal or informal correspondence, the system can accommodate various types of letters and user needs. With this system, the correspondence management process becomes more efficient and productive. The well-organized interface allows users to quickly find the required letters through the inbox and outbox menus. The easy-to-use letter addition feature speeds up the process of recording new letters. Additionally, the system is equipped with a reporting feature to help users analyze letter data comprehensively. This system offers an intuitive and efficient user experience in managing correspondence. The well-designed interface allows users to easily switch between the inbox, outbox, and new letter creation features. Additional features such as search, filter, and reporting help users manage and analyze letter data quickly and accurately. This system can accommodate various types of letters and user needs, both in office and other organizational environments.

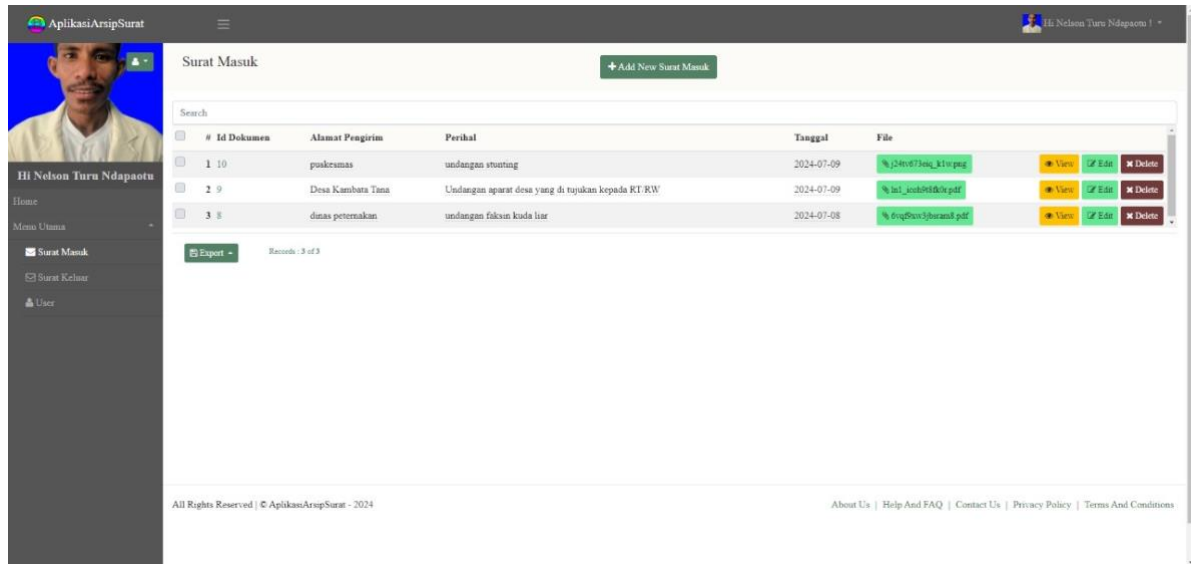


Fig.4: Surat Masuk

In the process of testing the Kabata Tana Village Archival Information System, the steps involved include functional testing to ensure that each feature operates according to specifications, user acceptance testing to assess alignment with user needs, and evaluation of performance, security, and integration testing. Load testing is conducted to evaluate system performance under high stress, while responsiveness testing ensures that the user interface responds quickly and efficiently. Retesting and troubleshooting are crucial stages to ensure effective improvements and maintenance. Testing also includes disaster recovery scenarios, sustainability testing, and continuous monitoring to ensure that the system operates well, is adaptable to change, and meets established security standards. This process supports the overall quality and readiness of the Kabata Tana Village Archival System to meet the needs and challenges that may arise.

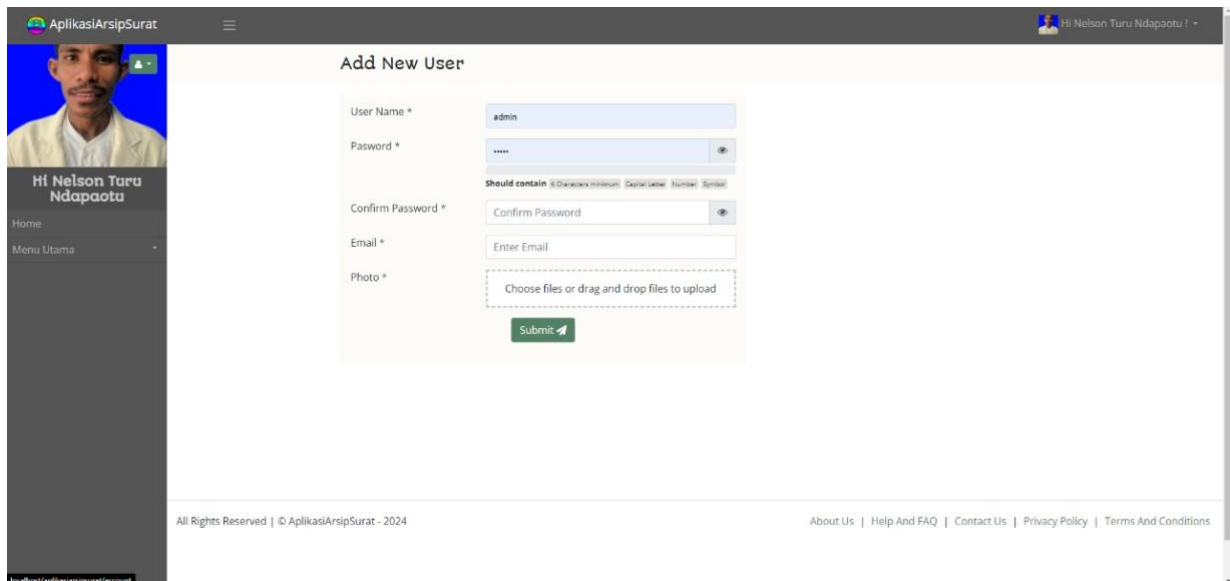


Fig.4: User

4. Conclusions

With its successful implementation, the Kambata Tana Village Archival System has had a significant positive impact on the performance of village officials. The system not only enhances efficiency and effectiveness in record management but also fosters a more inclusive

environment by facilitating community participation. Key features such as incoming and outgoing mail management, and user management have greatly contributed to increased convenience and ease of interaction. The guaranteed data security ensures the confidentiality of community information. Overall, the system has streamlined the archiving process, improved transparency, and made village services more responsive to community needs. For further development, it is recommended to continuously evaluate, add relevant new features, and enhance data security. User training, integration with other systems, and regular data analysis should be prioritized to ensure the system's sustainability and relevance. Consistency in the user interface and responsive technical support are also crucial.

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