Al-Muhajirin International Conference

Web-based archiving information system for incoming and outgoing letters at SMI 1-3 Al-Muhajirin

Rendi Aditya
Institut Teknologi Al-Muhajirin Purwakarta
rendiaditya16101996@gmail.com

Kustina Rahmadina
Institut Teknologi Al-Muhajirin Purwakarta
kustina19102004@gmail.com

Yoga Pangestu
Institut Teknologi Al-Muhajirin Purwakarta

Abstract
This study aims to design, develop, and implement a web-based information system for archiving incoming and outgoing letters at the Islamic Middle School (SMI) 1-3 Al-Muhajirin Purwakarta. The system is developed to enhance the effectiveness and efficiency of letter archive management. A qualitative research method with a case study approach is employed. The resulting system features key functionalities, including letter archiving, letter status notifications, and user management. With the implementation of this system, the archiving process becomes more structured and accessible, thereby reducing the risk of data loss and accelerating archive retrieval.

Keywords: website; letter archiving; document management; Islamic school; efficiency

INTRODUCTION

The rapid development of technology in both governmental institutions and private organizations has significantly increased the demand for information technology to support document archiving services, including at SMI 1-3 Al-Muhajirin Purwakarta. One of the most prevalent technologies found in governmental settings is the website. A website is an application that contains multimedia documents and is designed to make information easily accessible to users (Praja, Darmansah, & Wijayanto, 2022). Archive management plays a crucial role in administrative contexts, where the utilization of information technology enhances work efficiency, particularly in letter archiving systems.

As digital technology advances, educational institutions are increasingly required to adapt to developments in information systems. One essential aspect of this transformation is the management of letter archives. At SMI 1-3 Al-Muhajirin Purwakarta, the archiving system is still conducted manually, which results in several challenges such as limited storage space, increasing maintenance costs, and a high risk of document damage due to environmental factors and document aging.

In addition, conventional systems hinder the speed of document retrieval, thus reducing the effectiveness of administrative processes. This issue aligns with the principle found in *Surah al-Kahf* verse 49:

> *"Wa wuḍiʿa al-kitābu fatarā al-mujrimīna mushfiqīna mimmā fīhi wayaqūlūna yā waylatanā mā li-hādhā al-kitābi lā yughādiru ṣaghīratan walā kabīratan illā aḥṣāhā, wa-wajadū mā ʿamilū ḥāḍiran, wa-lā yaẓlimu rabbuka aḥadan."* (*Surah al-Kahf*, 18:49)
>
> *(And the record [of deeds] will be placed [open], and you will see the criminals fearful of that within it, and they will say, "Oh, woe to us! What is this book that leaves nothing small or great except that it has enumerated it?" And they will find what they did present [before them]. And your Lord does injustice to no one.)*

This verse emphasizes the importance of detailed and comprehensive record-keeping, where everything—small or large—is recorded accurately. It supports the core objective of an information system for archiving incoming and outgoing letters: ensuring that no document is overlooked, whether important or routine. It also highlights the importance of transparency, so that every letter can be accessed by authorized personnel without risk of manipulation or data loss.

Despite these needs, the current manual archiving system still faces limitations, including the need for additional personnel, long-term inefficiency, and increased risk of lost or damaged documents. As documents continue to accumulate over time, retrieval becomes more difficult (Langoday et al., 2023).

In Islam, the importance of proper documentation and information management is also emphasized in the Qur'an, as stated in *Surah al-Baqarah* verse 282:

> *"Yā ayyuhā alladhīna āmanū idhā tadāyantum bidaynin ilā ajalin musamman fa-uktubūh."* (*Surah al-Baqarah*, 2:282)
>
> *(O you who have believed, when you contract a debt for a specified term, write it down…)*

This verse underlines the significance of written documentation in Islam, particularly for ensuring justice and preventing disputes. The principle applies broadly to various aspects of life, including administrative management in educational environments.

In the context of developing a web-based information system for managing incoming and outgoing letters at SMI 1-3 Al-Muhajirin Purwakarta, systematic documentation and information management are critically important. A web-based system facilitates complete and accessible documentation, enhances transparency, and minimizes errors or data loss. From an Islamic perspective, digital archive management not only improves work efficiency but also reflects values of honesty, responsibility, and transparency.

To address these challenges, technological innovation is needed to develop a more efficient, secure, and structured document management system. A potential approach is to implement a web-based information system using the Waterfall method, as explored in the study by Praja *et al.* (2022), which demonstrated improved speed and accuracy in document search and management using digital archiving systems. Thus, developing a web-based system for managing incoming and outgoing letters becomes a relevant and necessary solution to enhance structured, secure, and accessible document handling.

With internet support, outgoing and incoming letters can be managed more flexibly, and various school activities at SMI 1-3 Al-Muhajirin Purwakarta can be communicated more efficiently. Since the school currently lacks a web-based digital archiving platform, this research aims to provide a modern, effective, and efficient

alternative that enables well-organized, accessible, and secure documentation. Hence, the proposed website system is expected to improve efficiency, accuracy, and data security in managing the school's administrative records.

RESEARCH METHOD

In this study, the system development method employed is the Waterfall model, which is one of the most widely used methodologies in software engineering. The choice of system development model is a crucial factor that determines the success of a project. The Waterfall model offers a systematic and structured approach, ensuring that each stage of the software development life cycle (SDLC) is conducted with precision and clarity.

The Waterfall model is characterized by its sequential workflow, which progresses through a series of defined phases, including requirement analysis, system design, coding, and testing. Each phase must be completed before the next phase begins, and the output of one phase serves as the input for the subsequent phase. This linear approach allows for a well-organized and controlled development process. The following steps are followed in this research:

Data Collection

The data collection techniques used in this research include interviews, observation, documentation, and literature review. This study was conducted through direct observation at the administrative office of SMI 1-3 Al-Muhajirin Purwakarta, as well as through reference analysis using books, journals, academic articles, and other credible sources related to information systems, letter archiving, and web-based technology. Sources were obtained from academic platforms such as Google Scholar to ensure the accuracy and relevance of the data.

Interview

Interview is a method of exchanging information and ideas between two people through a question-and-answer session aimed at exploring specific topics (Tanjung & Serli, 2022). The authors conducted interviews with administrative staff at SMI 1-3 Al-Muhajirin Purwakarta to understand the current workflow for managing incoming and outgoing letters. The interviews were semi-structured, with prepared key questions while allowing flexibility for respondents to elaborate based on their experiences. The questions focused on procedures for recording and storing letters, accessibility of archives, and technological challenges faced in the current system.

Observation

Observation is a data collection technique involving direct immersion in the environment to observe and gather information regarding the research subject (Juliyanto, 2021). The researchers conducted field observation to understand daily administrative routines, including how letters are received, archived, and retrieved. This method provided insights into the inefficiencies of the manual system, such as disorganized data, long search times, and vulnerability to document loss or damage.

Documentation

Documentation refers to the collection of evidence in various forms—written, oral, or visual—to support research (Rahman, 2021). In this study, the researchers

gathered both physical and digital documents from administrative staff. These include letter templates, registration books, archiving policies, and standard operating procedures. The documentation helps analyze the effectiveness of the current system and identify gaps that the new system should address.

Literature Review

The literature review involved studying academic references such as books, journals, and articles relevant to web-based archiving information systems. The goal was to understand the theoretical framework and best practices for designing such systems, including Electronic Document Management Systems (EDMS), data security standards, and scalable architectures. Previous studies were also reviewed to assess the strengths and weaknesses of existing systems. Sources were obtained from platforms like Google Scholar, ResearchGate, IEEE Xplore, and ScienceDirect to ensure academic rigor.

System Development Method

The Waterfall method consists of sequential stages, namely: requirement analysis, system design, coding, testing, and maintenance (Novendri *et al.*, 2019). Each stage in this model is interdependent and must be completed before moving to the next.

Requirement Analysis

This stage involves gathering and documenting system requirements based on input from users. Communication between users and developers is essential to ensure a mutual understanding of the software's expectations and limitations. Techniques such as interviews and direct observations were utilized to gather these insights.

System Design

This stage specifies the system architecture and hardware requirements. It includes designing the user interface, database structure, and overall framework using the Laravel MVC (Model-View-Controller) architecture. This design provides a blueprint for efficient and maintainable system implementation.

Coding

Coding is the process of transforming the design into executable code. The system was developed using PHP, Laravel framework, and MySQL for data storage. Key coding activities included:

1. **Technology selection**: PHP and Laravel were chosen for backend development, with MySQL as the database.
2. **Core module development**: Focused on letter input, editing, search, and reporting features.
3. **Unit testing**: Ensured each module functions correctly before integration.
4. **Debugging**: Resolved any issues identified during testing.

Testing

Testing is carried out in multiple phases to ensure the system operates as expected:

1. **Unit Testing**: Verifies individual components such as input forms and search features.
2. **Integration Testing**: Evaluates the interaction between modules like archiving and retrieval.
3. **System Testing**: Conducted to test the full system's performance, security, and accessibility.
4. **User Acceptance Testing (UAT)**: Final testing by end users (admin and division staff) to confirm the system meets operational needs.

Maintenance

This final stage involves ongoing support to address any issues not discovered during earlier phases and to improve system performance as new requirements emerge. Maintenance ensures the system remains functional, up-to-date, and responsive to user feedback.

RESULTS AND DISCUSSION

Needs Analysis

Needs analysis is the initial and crucial stage in the development of a Web-Based Archiving Information System for Incoming and Outgoing Letters at SMI 1-3 Al-Muhajirin Purwakarta. This phase aims to identify and define both user and system requirements to ensure that the developed system addresses existing problems in conventional archiving practices. The analysis covers both user and system needs.

User Requirements Analysis

The purpose of this analysis is to simplify website usage and improve the efficiency of information management in letter archiving at SMI 1-3 Al-Muhajirin Purwakarta. The system is designed to accommodate users' needs for structured and accessible archive management. There are two primary user roles in this system: **Admin** and **Division**, each with distinct responsibilities, as presented in **Table 1**.

Table 1. User Requirements Analysis

Actor	User Requirement Description
Admin	Login and logout; input incoming and outgoing letters; edit letters; generate letter reports
Division	Login and logout; generate letter reports

Admin

Admins have full access to the system. Their responsibilities include managing all incoming and outgoing letters, ensuring that archives are organized and accessible when needed. Admin tasks include:

1. **Login and Logout**
   Admins log in using valid credentials to access the system. Logout ensures that unauthorized users cannot access sensitive data.
2. **Input of Incoming and Outgoing Letters**

Admins enter detailed letter information, such as letter number, date, sender/recipient, subject, and attachments.

3. **Edit Letters**
   Admins can edit entries in case of errors or updates to ensure data accuracy.
4. **Generate Reports**
   Admins generate reports on letter activity for auditing and evaluation purposes.

Division

Division users have limited access and focus solely on data relevant to their department. Their roles include:

1. **Login and Logout**
   Division users authenticate themselves using valid credentials.
2. **Generate Reports**
   They generate division-specific letter reports, including incoming and outgoing correspondence summaries and follow-up status.

System Requirements Analysis

System requirements define what the system should perform and include specifications necessary for optimal performance. **Table 2** summarizes the key requirements of the system.

Table 2. System Requirements Analysis

Component	System Requirement Description
System	Must support login/logout, input of letters, CRUD operations, multi-user access, and reporting

The system must support:

1. **Login and Logout**
   All users must log in using usernames and passwords for secure access.
2. **Letter Input**
   The system should capture comprehensive data for each incoming and outgoing letter.
3. **CRUD Functions**
   Support for creating, reading, updating, and deleting letter data to ensure flexible and efficient management.
4. **Multi-user Login**
   Role-based access must be implemented for Admin and Division users to ensure proper authorization and data security.
5. **Reporting**
   The system should automatically generate reports for both incoming and outgoing letters to support administrative oversight.

With clearly defined roles and features, the web-based archiving system can be managed securely, efficiently, and in a structured manner. Admins serve as the main system managers, while division users contribute by accessing relevant documents. This

distribution ensures smooth archiving processes in compliance with administrative standards at SMI 1-3 Al-Muhajirin Purwakarta.

System Design

The system design stage uses **Unified Modeling Language (UML)** to visually represent the system's architecture and interactions.

Use Case Diagram

A use case diagram describes how users interact with the system. The system includes two actors:

1. **Admin**: Full access to manage incoming and outgoing letters, and user accounts.
2. **Division**: Limited access to view and report relevant letters.

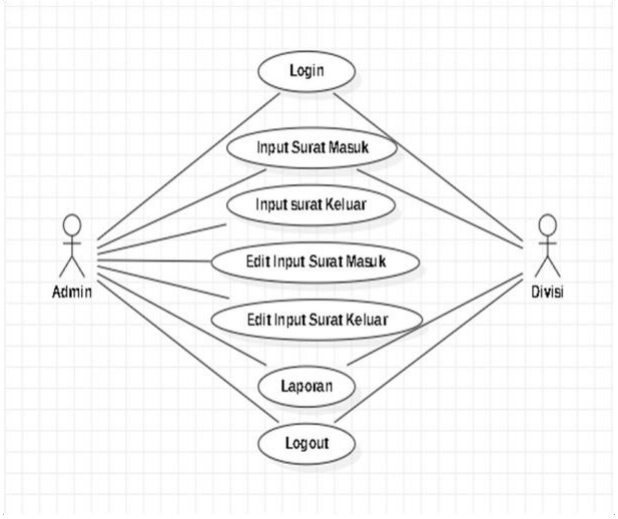

Figure: 1. Use Case Diagram Website Archive

Activity Diagram

This diagram maps out the workflow of tasks or processes in the system. It shows how users interact with various features, such as login, letter submission, and report generation.

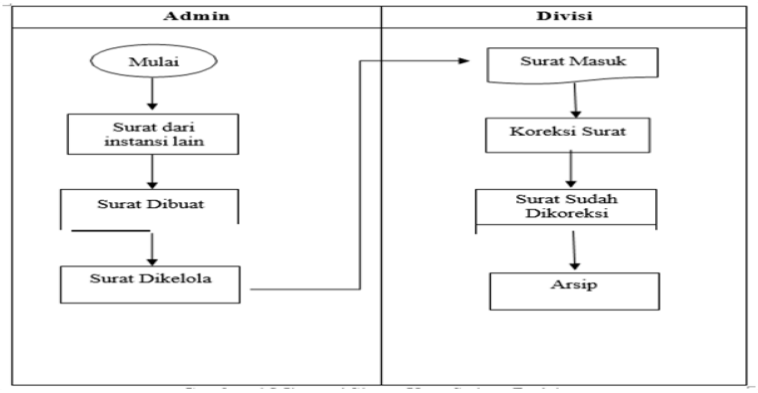

Figure 2. Activity Diagram Website Archive

Class Diagram

The class diagram represents the structure of the system, including classes, attributes, methods, and the relationships between them. It is used to visualize and design the system architecture more effectively.

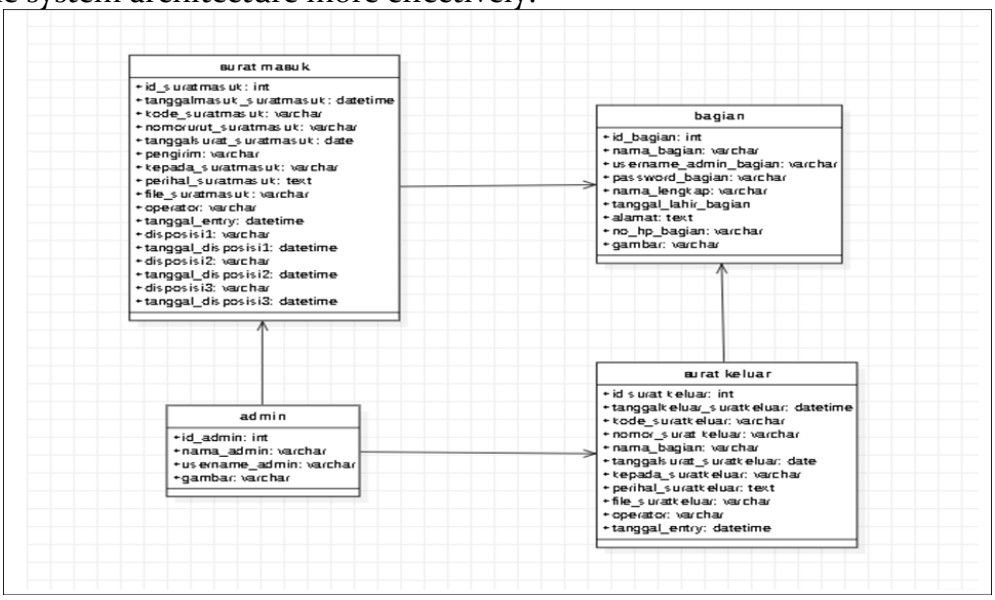

Figure 3. Class Diagram Website Archive

Flowchart Diagram

A flowchart is a graphical representation of a process or algorithm. It illustrates the step-by-step logic for key functions, helping visualize data flows and decision points in the system.

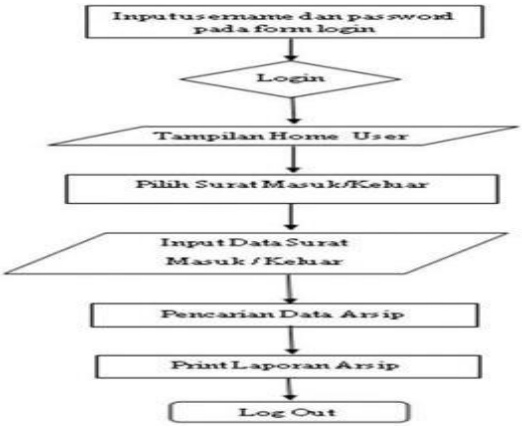

Figure 4. Flowchart Diagram website archive

System Implementation Results

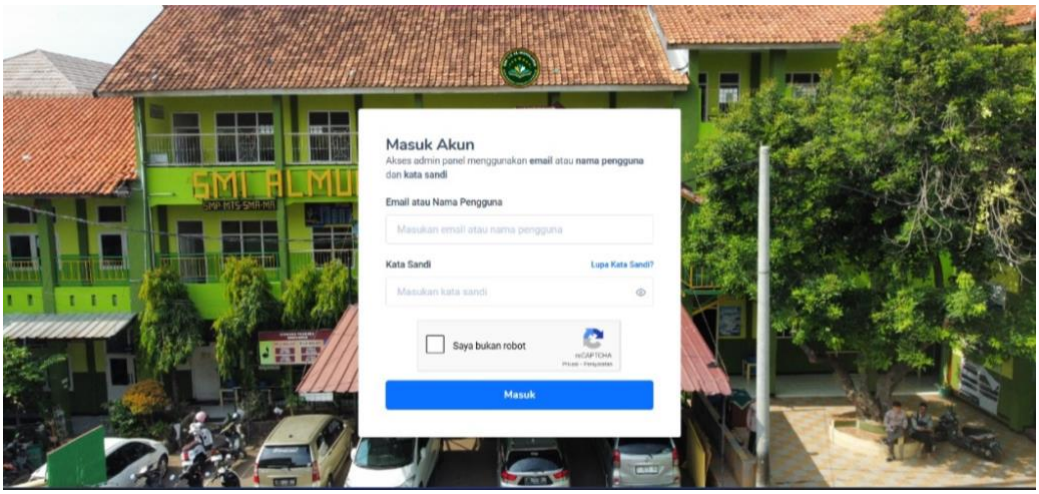

Figure 5. Home

System implementation refers to the practical realization of the design, including coding, testing, and launching. Below are several key pages from the implemented system:

1. **Login Page**
   Requires valid email or username and password. Incorrect entries trigger an error message, while correct credentials grant access to the system.
2. **Dashboard Page**
   After login, users are directed to the dashboard, which acts as the central control panel for accessing system features.
3. **Incoming Letter Page**
   Allows Admin to input details of incoming letters.
4. **Outgoing Letter Page**
   Enables Admin to document outgoing letters.

The application system is designed to be as user-friendly as possible to facilitate ease of use by Admin and Division teams. Testing results indicate that the application functions properly and is ready for online deployment. Regular maintenance is recommended to sustain system performance and avoid potential issues.

CONCLUSION

Based on the results of this research, the implementation of a computerized information system that incorporates Qur'anic values not only provides centralized and well-controlled data storage, but also ensures the accuracy and accountability of archived information. This results in faster and more accurate data retrieval, while also reflecting Islamic values in the principles of honest, precise, and trustworthy recordkeeping.

By applying the concept of documentation as taught in the Qur'an, this archiving information system becomes a tool that supports transparency, justice, and progress in various aspects of school administration. The researchers have developed usage documentation to assist users in operating the website. For future researchers, it is

recommended to enhance the system's interface to make it more dynamic and consider developing a mobile application version for more detailed functionality.

REFERENCES

Afrianingsih, A., Putri, A. R., & Munir, M. M. (2019). Karakteristik huruf hijaiyah sebagai sarana pembelajaran baca tulis awal anak usia dini. Jurnal Ilmu Pendidikan Anak Usia Dini, 5(2), 2581–0413.

Heriyanto, Y. (2018). *Perancangan sistem informasi rental mobil berbasis web pada PT. APM Rent Car*, 2(2).

Juliyanto, F. (2021). Rekayasa aplikasi manajemen e-filling dokumen surat pada PT ALP (Atosim Lampung Pelayaran). *Jurnal Teknologi dan Sistem Informasi (JTSI)*, 2(1), 43–49. http://jim.teknokrat.ac.id/index.php/JTSI

Langoday, M. I. K., Racma, D. F., & Wibowo, A. (2023). Kualitas sistem informasi pengarsipan surat dan dampaknya terhadap efisiensi laporan pengarsipan pada SDN 1 Karangklesem berbasis website. *Jurnal Ilmu Multidisiplin*, 1(2), 53–61.

Novendri, M. S., et al. (2019). Aplikasi inventaris barang pada MTS Nurul Islam Dumai menggunakan PHP dan MySQL.

Nurfitriana, E., Apriliah, W., Ferliyanti, H., Basri, H., & Ratnawati, R. (2020). Implementasi model waterfall dalam sistem informasi akuntansi piutang jasa penyewaan kendaraan pada PT. Tricipta Swadaya Karawang. *Jurnal Interkom: Jurnal Publikasi Ilmiah Bidang Teknologi Informasi dan Komunikasi*, 15(1), 36–45. https://doi.org/10.35969/interkom.v15i1.66

Praja, A. B., Darmansah, D., & Wijayanto, S. (2022). Sistem informasi pencatatan surat masuk dan surat keluar berbasis website menggunakan metode Waterfall. *Jurnal Sistem Komputer dan Informatika (JSON)*, 3(3), 273. https://doi.org/10.30865/json.v3i3.3914

Prastowo, A. T., & Swasono, M. A. (2021). Analisis perancangan sistem informasi pengendalian persediaan barang. *Jurnal Sistem Informasi dan Komputer*, 2(1).

Pertiwi, D. D., & Taufiq, R. (2020). Analisis dan desain sistem informasi pengolahan nilai siswa di SMK Avicena Rajeg, 29–35.

Rahman, F. Y. (2021). Penerapan metode Waterfall pada aplikasi laundry berbasis web.

Tanjung, A. S., & Serli, D. R. K. (2022). Perancangan sistem informasi jasa laundry berbasis web pada Laundry Cucimania Depok.

Yusa Rahman, F. (2021). Penerapan metode Waterfall pada aplikasi laundry berbasis web.

Anggraini, Y., Pasha, D., & Setiawan, A. (2020). Sistem informasi penjualan sepeda berbasis web menggunakan framework CodeIgniter (studi kasus: Orbit Station). *Jurnal Teknologi dan Sistem Informasi (JTSI)*, 1(2), 64–70. http://jim.teknokrat.ac.id/index.php/JTSI