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Design of an Information System for Archiving Hajj Pilgrim Files at the Ministry of Religion of Medan City

Perancangan Sistem Informasi Pengarsipan Berkas Jamaah Haji pada Kantor Kementerian Agama Kota Medan

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A B S T R A C T

In the era of globalization, computer technology plays a very important role in assisting the process of activities at the Medan City Ministry of Religion office, especially in the Hajj services section where files are still stored manually. The aim of creating this file filing system is to help and make it easier for employees to manage existing files.The research process involved identifying problems in Hajj file management, collecting data through observation, interviews, and literature study. System development uses PHP, Bootstrap, and HTML5 programming languages as well as software, MySQL, Xampp, and Visual Studio Code. This system development method uses the waterfall method which has stages in a systematic sequence starting from analysis to maintenance. This research produces an information system in the form of a file archiving website that can help employees work in storing files, searching for data quickly and accurately, minimizing the risk of damage or loss of files, as well as making it easier for employees to manage archive data to be more effective and efficient, as well as ensuring information security stored data.

Keyword: information systems, archives, waterfall

A B S T R A K

Pada era globalisasi, teknologi komputer memiliki peran yang sangat penting dalam mendukung proses kegiatan di Kantor Kementerian Agama Kota Medan, khususnya pada bagian layanan haji yang masih melakukan penyimpanan berkas secara manual. Tujuan dari pembuatan sistem pengarsipan berkas ini adalah untuk membantu dan mempermudah pegawai dalam mengelola berkas yang ada. Proses penelitian dilakukan dengan mengidentifikasi permasalahan dalam pengelolaan berkas haji, serta pengumpulan data melalui observasi, wawancara, dan studi pustaka. Pengembangan sistem dilakukan menggunakan bahasa pemrograman PHP, Bootstrap, dan HTML5, serta perangkat lunak MySQL, XAMPP, dan Visual Studio Code. Metode pengembangan sistem yang digunakan adalah metode waterfall yang memiliki tahapan berurutan secara sistematis, mulai dari analisis hingga pemeliharaan. Penelitian ini menghasilkan sebuah sistem informasi berupa situs web pengarsipan berkas yang dapat membantu pekerjaan pegawai dalam menyimpan berkas, melakukan pencarian data dengan cepat dan akurat, meminimalkan risiko kerusakan atau kehilangan berkas, serta memudahkan pengelolaan data arsip agar lebih efektif dan efisien, sekaligus menjamin keamanan informasi data yang disimpan.

Kata Kunci: sistem informasi, arsip, waterfall

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1. INTRODUCTION

Information systems can be a tool for humans in storing, processing and organizing data. The sophistication of the information system will speed up the data processing process so that the time required by the user will be reduced compared to using manual methods[1]–[4]. In an era where information technology is developing rapidly, the importance of an efficient and effective filing system in organizations cannot be doubted [5], [6]. The Medan City Ministry of Religion, as an institution responsible for managing various religious affairs, including managing data and information related to Hajj pilgrims, requires a reliable and integrated archiving information system [7]–[9].

Archives are written, oral or pictorial documents from the past issued by official agencies and stored in written or electronic form.[10]At the Ministry of Religion of Medan city Hajj office, archive management is still manual, which is less efficient and effective, which can result in less risk of damage and loss of documents [11]–[13]. In the field of administration and management, archives play a very important role as a basic material for planning, monitoring, reporting and decision making. Archive management that is not well organized will make it difficult when you need to return or reuse the data, especially when searching for data, especially if the data is needed in a hurry [14]–[17].

The development of information and communication technology is a solution to various current problems. At the Medan City Ministry of Religion Office, the use of information technology is still not fully optimal, especially for archiving Hajj pilgrims' files which is still done manually using filing cabinets. This makes it difficult to search for information which takes a long time and limits the data storage space for all prospective Hajj pilgrims [18]–[20]. To overcome this problem, the author plans to create a web-based application to store and manage data on prospective Hajj pilgrims so that they are neatly arranged in the Medan City Ministry of Religion office [21], [22].

Designing a file archiving information system is an urgent need. The design of this system will provide solutions to various problems related to archive management that may be encountered, such as difficulty searching for data, lack of integration between various related data, and the risk of file loss or damage due to irregular storage [23]–[25]. By using appropriate and comprehensive information technology, a well-designed filing system will provide significant benefits. Process efficiency, ease of access to information, data security, and structured archive management are some of them [26]. It is hoped that the design of this file archiving information system will become a strong foundation in supporting Medan City Ministry of Religion employees, as well as providing better services to Hajj pilgrims and other related parties.

Previous research that discussed archiving incoming and outgoing letters in the Ministry of Religion used the SDLC concept. The system design was created using a modeling language using UML. The archiving information system was created using the PHP programming language using the MYSQL database. System testing uses alpha and beta testing. Alpha testing applies black box testing techniques when the test results are valid. In beta testing it was very good with an average score of 90.09% [27].

Based on previous research, research has differences, namely in collecting data, developing the system used, and also designing a modern and more efficient system. It is hoped that this research can provide solutions that suit the existing needs of the Medan City Ministry of Religion office in the Hajj services section. This research usesprogramming languages PHP, Bootstrap, and HTML5 as well as software, MySQL, Xampp, and Visual Studio Code.

2. METHODOLOGY

Research methods are procedures for conducting research to formulate a problem and answer research objectives. In this research method, there are several stages used by the author, such as problem identification, data collection and software development as follows.

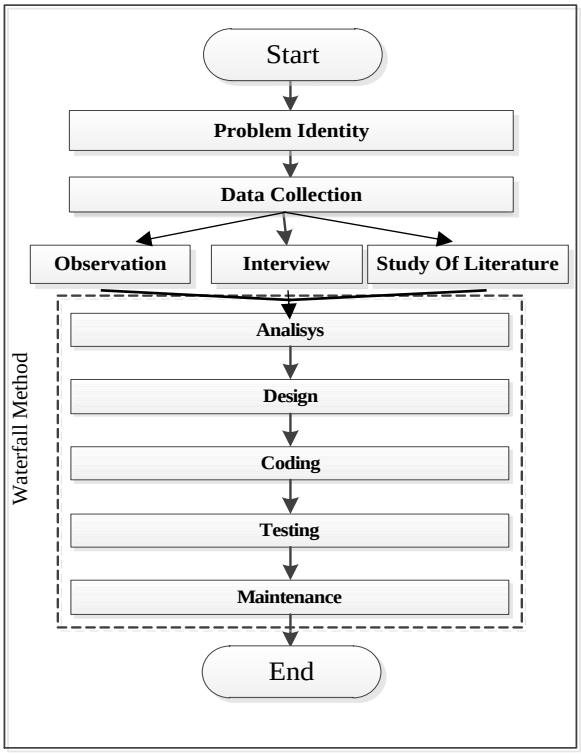

Figure 1. Research Methodology

The research methodology comprises several stages, including problem identification, data collection, and software development, as illustrated in Figure 1.

2.1 Identification of problems

Identification of the problem in this research is the design of archiving Hajj files in the Medan City Ministry of Religion office which still uses manual methods. Some of the problems that may occur are irregular file management which causes difficulties in searching and managing files, the risk of losing important files due to the lack of copies or backups, delays in accessing information due to having to search for files manually, and the potential for errors in recording files or placing files. can interfere with data accuracy [28].

2.2 Data collection

The data collection stage was carried out in field research and also library research.

2.2.1 Observation

Direct observations were carried out at the Medan City Ministry of Religion office in the Hajj services section when carrying out practical work from September to October 2023. From these observations, the results showed that employees archiving data files on Hajj pilgrims still used manual methods.

2.2.2 Interview

Interviews were conducted with employees in the Hajj services department to obtain accurate and reliable information. The purpose of the interview is to collect the data needed to create an application design that can help employee needs and performance.

2.2.3 Study of literature

Literature studies were carried out to obtain supporting data in research, the data obtained were in the form of journals, theses and articles. By conducting a search related to the research title.

2.3 System development

The methodology used for system development is using the waterfall model or waterfall method. This method provides a sequential software life flow starting from analysis, design, coding, and testing or system testing and system maintenance (maintenance). Following are the steps [29], [30].

2.3.1 Analysis

This stage is a data collection process that is carried out to fulfill whatever is needed in creating the system. This collection process is carried out intensively to specify the software so that it can be understood what kind of software the user needs.

2.3.2 Design

The process of creating a design is carried out with the aim of providing an overview of what must be done and what is done to create the appearance of the system. Software design is a process that focuses on the design of creating a software program which includes data structures, software architecture, coding procedures and also interface representation. From this stage you can find out the software requirements and also the design so that it can be implemented into a program in the future. This stage places more emphasis on the overall system design stage, system design is carried out to follow up on the previous stage and as a reference for program creation.

2.3.3 Creating Program Code (Coding)

The design must be translated into a software program. The result of this stage is that the program matches the appearance that was previously designed. At this stage the author carries out coding using the PHP, Bootstrap, and HTML5 programming languages as well as the software, MySQL, Xampp, and Visual Studio Code.

2.3.4 Testing

Testing the software to minimize errors and ensure the resulting display is as desired and validated with the user's specified needs. This testing stage is carried out to minimize errors and ensure that the output produced is as desired. This test is carried out to find out whether the media information system is running according to plan, starting from the initial stage on the Home menu until it is successfully received.

2.3.5 Maintenance

The software that has been implemented is then monitored and maintained. However, it does not rule out the possibility that software will experience changes when it has been sent to the user. Changes could occur because of errors that appear and are not detected during testing or the software must adapt. You can repeat the development process for existing software but don't have to create the software. the new one.

3. RESULTS AND DISCUSSION

The results of this research are to produce a document archiving information system that can assist in managing archival documents in the Hajj services section at the Medan City Ministry of Religion office. This system is designed to replace the document archiving system which initially still used manual methods. The first step is to activate the login page, first by opening a browser, typing the address http:localhost/arsip, then the main login menu page will be displayed for admins, operators and leaders by entering the username and password. The aim and purpose of developing this program is to facilitate services in searching for data that users need to quickly search and shorten search time.

3.1 System Design

A. Use Case Diagram

Below are several activities that can be carried out by admins who are directly involved in the system which are depicted through a us case diagram. In Figure 2 you can see that there are several activities that can be

carried out by admins who are directly involved in the system. These include being able to carry out login activities, then the archive manager can perform the creat, read, update, delete functions and can also view file views in the form of incoming and outgoing letters then the admin can carry out the logout process.

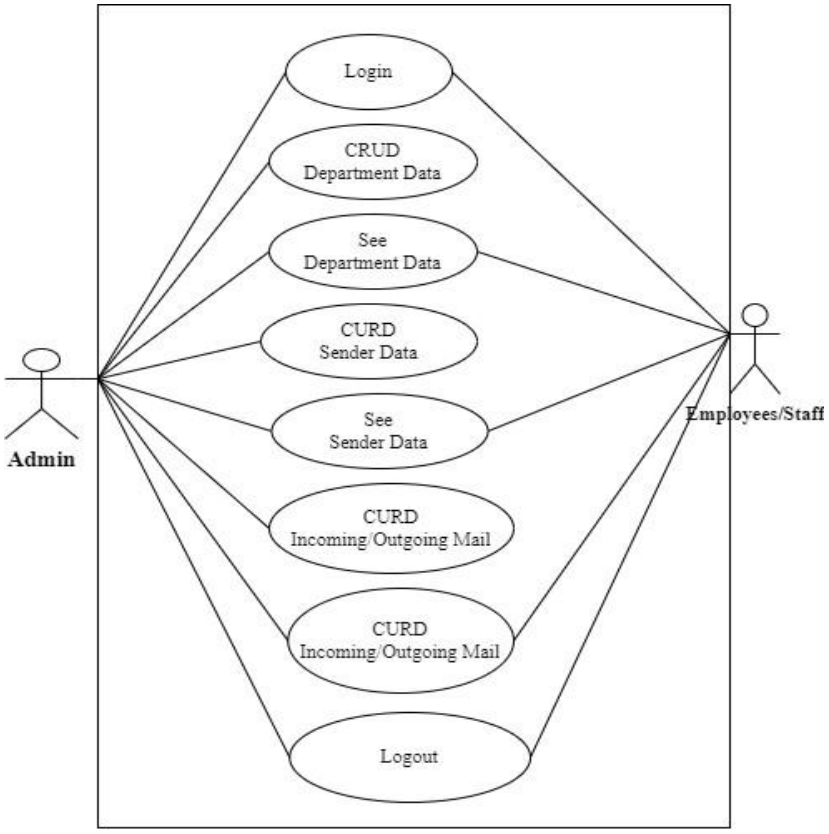

Figure 2. Use Case Diagram

Below are several activities that can be performed by administrators who interact directly with the system, as illustrated in Figure 2. These activities include logging in, where the archive manager is able to perform create, read, update, and delete (CRUD) operations. Additionally, the admin can view files categorized as incoming and outgoing letters, and finally, perform the logout process.

B. Activity Diagram

Activity diagram for adding files in Figure 3 in the activity diagram for inputting files. Admin can select the add section and it will display a form that must be filled in. The added form forwhich the files have been input can then be submitted if everything is appropriate.

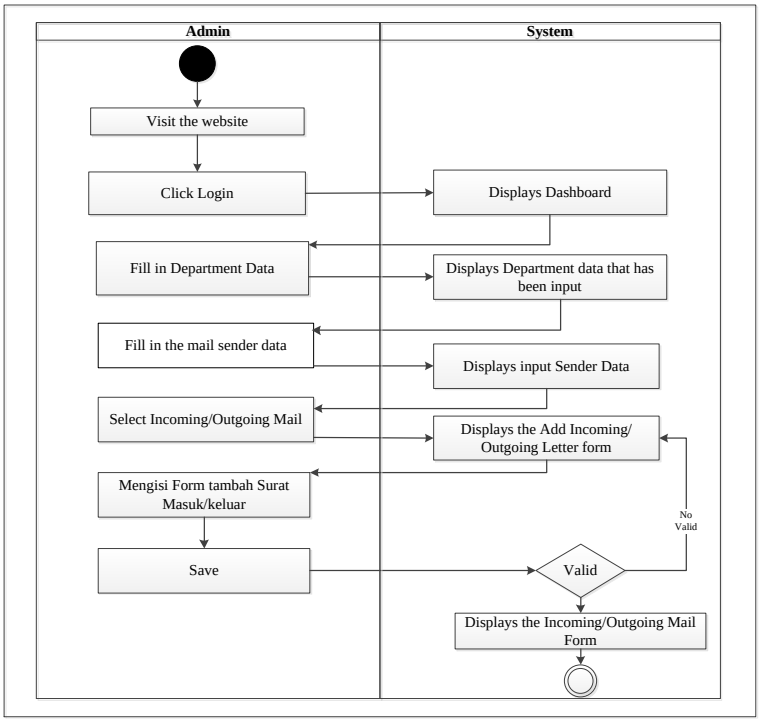

Figure.3 Activity Diagram

The activity diagram for adding files is shown in Figure 3. In this diagram, the admin selects the "Add" option, which displays a form that must be filled out. Once all required fields are completed correctly, the file can be submitted if all the input is appropriate.

3.2 User Interface Design

The user interface is the output in the form of a display page which proves that the file archiving website that has been built is functioning properly. The following is a display of the file archiving website, an example of implementing a website display with the user as admin.

1. Login

   The login page is the initial menu when the admin accesses the website. It can be seen in the image below that the login form on the login page is filled with a username and password.

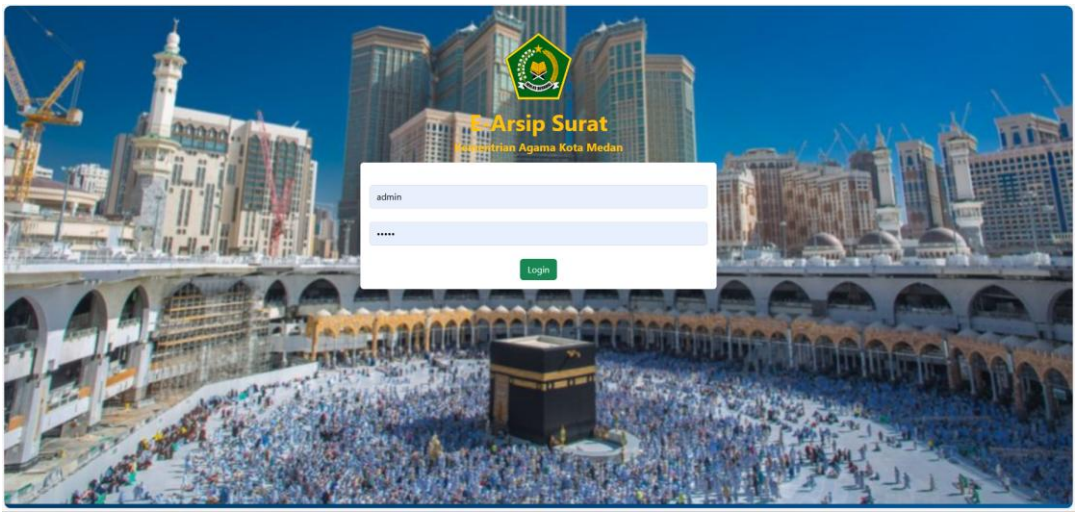

Figure 4. Login Page

To be able to enter the system, the admin must log in first. It can be seen in Figure.4

2. Dashboards
The dashboard display is the first page displayed after successful login.

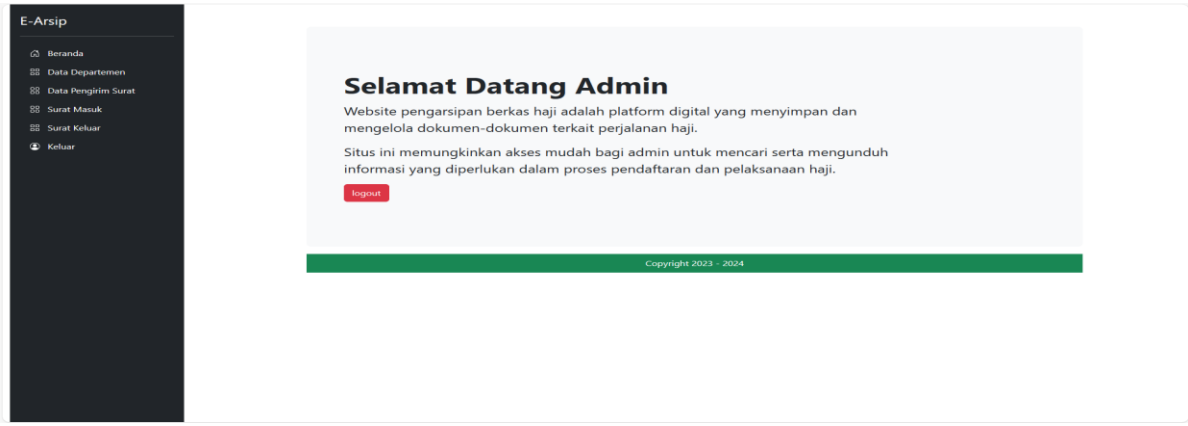

Figura 5. Dashboard

In Figure 5 on this page we are told that this website stores files on prospective Hajj pilgrims.

3. Department Data
The department data page is a page that inputs departmental data to make it easier for admins to search for data.

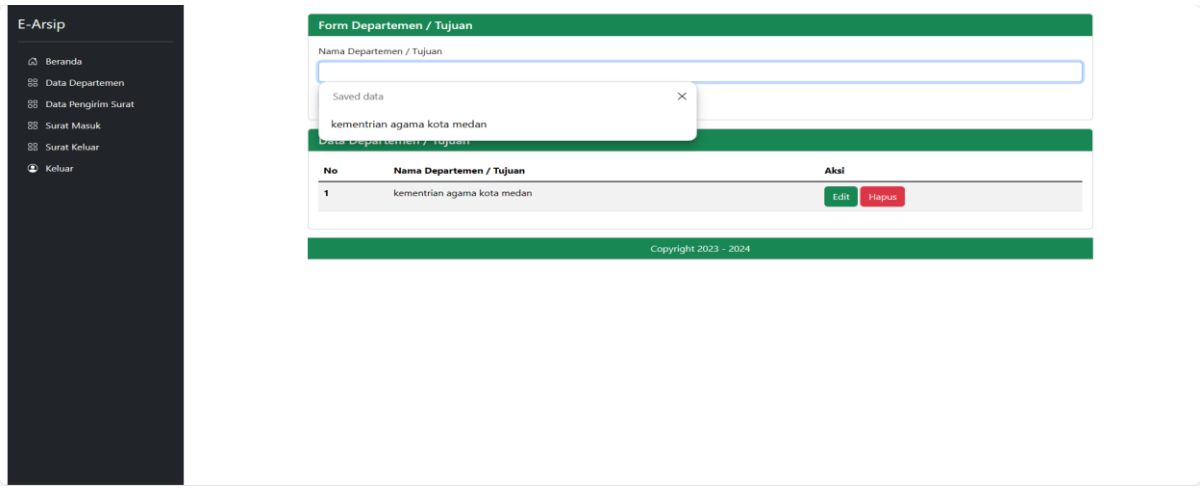

Figure 6. Departmental data form

In Figure 6 first input the department data, after that it is saved, then the data that has been input will appear below, this data can be edited and also deleted.

4. Letter Sender
The letter sender page is filled in first according to the data in the form, after that the data is saved.

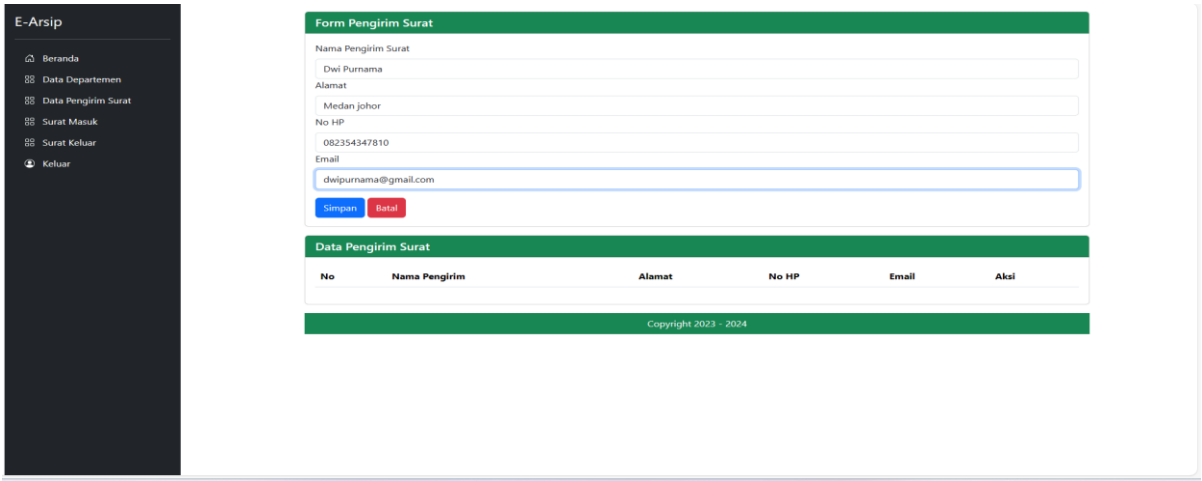

Figure 7. Sender form

In Figure 7 after saving the data will appear below as in the department data display, the sender data that has been input can be edited and also deleted.

5. Incoming mail

Go to the incoming letter display section in Figure 8 To add data, click the add data section and a display like the one below will appear, complete the form first then save.

Figure 8. Incoming letter data input form

In Figure 9 the display after the data has been input into the system, to view the document, you can click on (file), and it can also be edited and deleted. The file section can be opened and the file can also be downloaded.

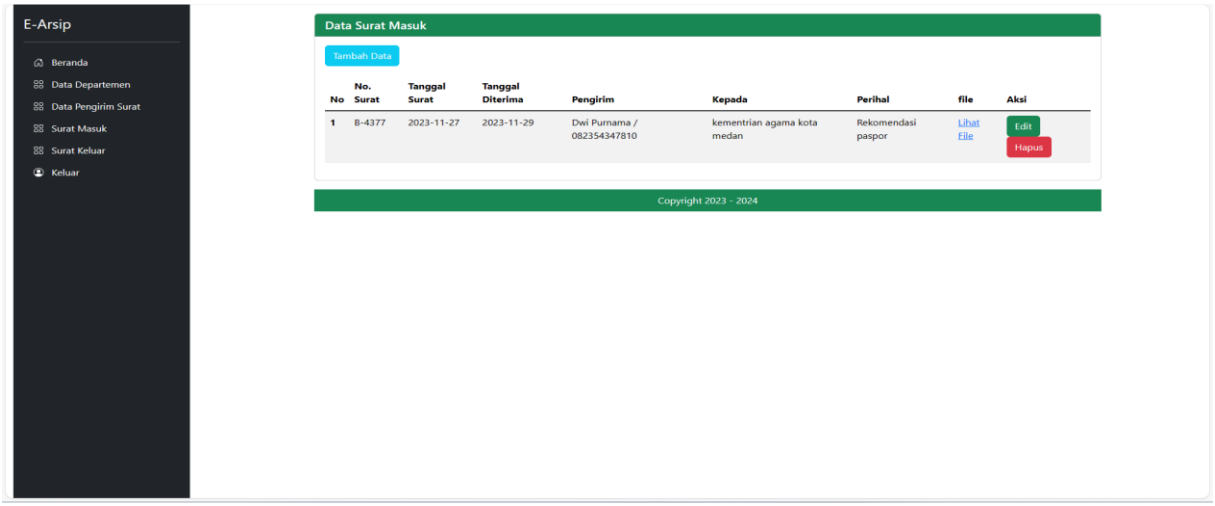

Figure 9. Entrance letter form that has been input

6. Outgoing mail

Go to the outgoing mail section as shown in Figure 10 To add data, click the add data section and it will appear as shown below, complete the form first then save.

Figure 10. Outgoing letter input form

Figure 11 shows the display after the data has been input into the system. To view the document, you can click on it (file), and it can also be edited and deleted.

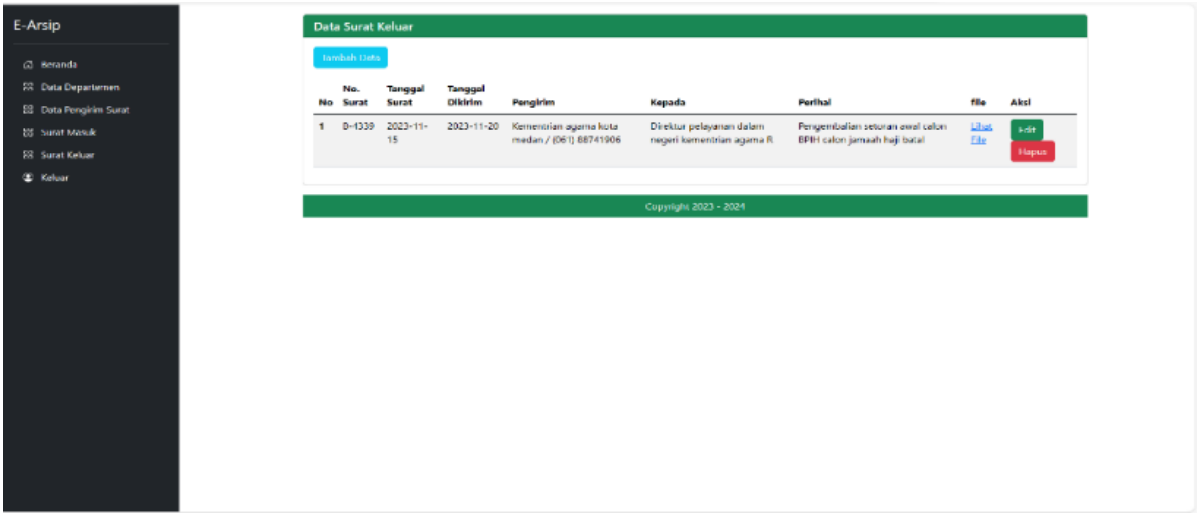

Figure 11. Outgoing letter form that has been input

The file section can be opened and the file can also be downloaded.

7. Logout

After completing data input, to maintain the security of the admin files, you can click the exit section.

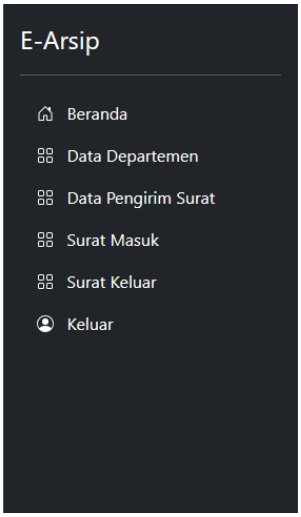

Figure 12. Exit form

It can be seen in Figure 12 after that the system exits by itself.

3.3 Testing

In testing the website-based Hajj file archiving design system, a number of tests have been carried out to ensure optimal functionality. Testing starts by checking the admin's ease of using the website, including navigation to the Hajj file archiving page. The system succeeded in identifying the admin through a secure process, and the admin uploaded data without experiencing technical problems. The system was also successful in verifying the data uploaded by the admin.

1. Admin system testing

The progress of system testing on the admin menu can be seen in Table 1.

Table 1. Admin System Testing

No	Scenario	Inputs	Next Stages	Results
1.	Admin login	Username, Passwords & sign in	Admin Dashboard	Valid
2.	Manage Department Data	Department Data	Save, Edit, Delete Databases	Valid
3.	Manage Sender Data	Sender Data	Save, Edit, Delete Databases	Valid
4.	Manage Incoming Letters/Outgoing Letters	Incoming Mail/Outgoing Mail Data	Save, Edit, Delete Databases	Valid
5.	Logout Admin	Sign Out	Go out From System	Valid

2. Employee System Testing

The progress of system testing on the Employee system menu can be seen in Table 2

Table 2. Employee System Testing

No	Scenario	Inputs	Next Stages	Results
1.	Employee Login	Username, Passwords & sign in	Dashboard	Valid
2.	View Department Data	Department Data	print data	Valid
3.	View Sender Data	Sender Data	print data	Valid
4.	View Incoming Mail/Outgoing Mail Data	Incoming Mail/Outgoing Mail Data	print data	Valid
5.	Employee Logout	Sign out	Go out From the system	Valid

The research successfully resulted in the development of a web-based document archiving information system aimed at facilitating the management of documents within the Hajj Services Division at the Medan City Ministry of Religious Affairs. The system replaces a previously manual archiving process, providing digital access, data security, and enhanced search efficiency.

3.4. System Functionality and Features

From the test results, it is evident that all main features such as login/logout access, data input (department, sender, incoming/outgoing letters), data editing and deletion, and file downloads work as intended. The system interface allows administrators and employees to perform their respective roles efficiently.

The login system ensures only authorized users can access the platform, which aligns with data security practices as noted in [5] and [11], where login authentication is an essential component of digital archiving. The CRUD functionalities allow for efficient file updates and tracking, supporting the workflow and minimizing the risks of data duplication or loss, as emphasized in [1], [6], and [18].

3.5. Improved Efficiency

The newly developed system enhances searchability and accessibility of files. Compared to the manual method, where tracking specific documents could take considerable time, this digital system enables fast retrieval, which is essential during peak service periods such as Hajj season. As discussed by Pertiwi [2], the digitization of filing systems significantly reduces search time and human error.

The system was developed using the Waterfall model, which helped in clearly defining stages like requirement analysis, design, implementation, and testing. This method is consistent with practices in similar studies [4], [26], [30] that used structured development models for government document management systems.

3.6. User Experience and Testing

Testing showed a positive outcome where both admin and employee users could navigate easily through the system, perform actions as expected, and generate accurate outputs. The user interface is intuitive and facilitates ease of use for non-technical users, as recommended in user-centered design approaches like those in [8] and [10].

3.7. Comparison with Related Studies

Compared to similar systems, such as the one developed at the Sukoharjo Regional Financial Agency [8] or the BPN Office in Pekanbaru [28], this system integrates similar key features: secure access, user role separation, and document categorization (incoming/outgoing). However, this study focuses more specifically on Hajj service documentation, which has unique data structures and regulatory requirements.

CONCLUSION

Based on the results of the research and testing conducted, it can be concluded that the web-based file archiving information system developed for the Hajj Services Division at the Medan City Ministry of Religious Affairs has successfully met its objectives. The system facilitates efficient document management by enabling quick and accurate data retrieval, secure access through login and logout features, and reliable file handling using create, read, update, and delete (CRUD) functionalities. By replacing the previous manual system, this digital archiving platform minimizes the risk of data loss and damage, enhances administrative performance, and supports better service delivery in managing Hajj-related documentation. Overall, the system provides a practical and secure solution that significantly improves the effectiveness of the archiving process.

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