

# Development of Mail Archive Management Information System at Lombok Tengah District Education Office

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**Abstract** – The Mail Archive Management Information System at the Lombok Tengah Education Office was created for the effectiveness and efficiency of storing or managing incoming mail archives and outgoing mail archives at the Education Office. Management of mails that still use the manual method, namely by storing mail archives on folders, makes frequent errors in storage such as: loss of mails, tearing of mails and so on, as well as errors in recording and the duration of data searching. This Mail Archive Management Information System was designed and built using the waterfall method and MVC (Model View Controller) as the programming method, this information system is web-based, created using the PHP framework, namely CodeIgniter, HTML, Javascript, and CSS. As for the server, it uses a default Codeigniter local server. The management of the mail archives generated by the system is able to speed up the data searching process and is able to monitoring the amount of incoming mail, outgoing mail and the number of users using the system.

**Keywords** – Archive Management, Codeignite, Information System, Mail.

## I. INTRODUCTION

Computerized archive management has now become a much-needed choice for both government and private agencies. Because it can streamline storage space, facilitate data collection, facilitate search and monitoring and reporting of archives [1]. Archives are a source of information which certainly has an important role in the survival of the company because archives have a variety of information that can be used as evidence of accountability or as a supporting tool in making a decision [2]. At the Central Lombok Regency Education Office, which is a government agency that uses the computer only in certain parts, one of the most important information in an institution is data from the agency's activities, this data is contained in the archives. One of the problems faced by the Central Lombok District Education Office includes filing letters, where the system for recording incoming and outgoing letters and the disposition of letters still uses a manual process, as a result it is difficult to find the archives needed for the process of carrying out its activities, causing miscommunication. and duplication of archives that hinders the smooth running of work activities [3]. One of the tasks of the incoming and outgoing mail filing section is to manually compose received and issued letters. Therefore a letter filing system is needed to overcome problems in terms of recording incoming and outgoing letters, the computerized recording process can record errors or mistakes that occur, so that data accumulation does not occur and searching for the necessary data will be very important. easy to find when it has been computerized [4].

Through this Letter Archiving Information System it is hoped that it will make it easier for government agencies of the Central Lombok District Education Office to run more optimally. Having an information system that

is able to manage projects successfully and efficiently is very important for agencies and businesses [5].

In accordance with Article 4 of the Lombok Tengah Regency Regulation Number 72 of 2021, the education office in Lombok Tengah Regency has the following responsibilities: formulation of policies, plans, programs and budgets in the fields of basic education, early childhood education and non-formal education, fostering educators and education personnel, as well as the field of educational facilities and infrastructure. Outgoing and incoming mails, as well as filing methods (which are still done by hand and stored in a folder). all of them are closely linked in a government agency such as the Lombok Tengah Education Office. As a result, old mails are not neatly arranged [6].

Based on this description, the development of a Mail File Management Information System is very possible, because it will enable effective data storage and retrieval [7]. Therefore, an archival information system has been developed that makes it easier to find archives when needed. No doubt again [8].

## II. RESEARCH METHODOLOGY

### A. Information System

Organizations use information systems to collect and distribute information internally and externally using a variety of technologies and processes [9].

According to [10] there are 7 functions of information systems, namely:

1. To make current data more accessible to consumers without the need for additional information systems.
2. Improve productivity of application development and system maintenance.
3. Ensure that quality and expertise in essential uses of information systems are available. Mengidentifikasi kebutuhan mengenai keterampilan pendukung sistem informasi.



4. Anticipating and understanding the economic consequences.
5. Determine the investment to be directed at the information system.
6. Develop an effective planning process.

#### B. Application and System Software Modeling

In Tohari's view, "fashioning is a simplification of a problem. As a visualization and communication medium between the many parties involved in the creation of a system or application software, modeling serves as a useful tool in the context of system development or application software [11]. Unified Modeling Language (UML) is a standard specification language used to define, design, and develop software [12].

#### C. Visual Studio Code

According to [13], "Visual Studio Code (VS Code) is a lightweight and reliable text editor designed by Microsoft for multi-platform operating systems, which means it is also available for Linux, Mac, and Windows versions." In addition, this text editor can be used to write code in additional programming languages that can be installed via the Visual Studio Code market (such as C++, C#, Python, Go, Java, etc.) in addition to JavaScript and TypeScript. Visual Studio Code comes with many tools to enhance text editor functionality, including Intelisense, Git Integration, Debugging, and Extensions. It will continue to evolve after the Visual version itself is".

#### D. Framework

A framework is a set of ready-made functions or methods and classes for a specific purpose that a programmer can use without having to build new functions or classes from scratch [14].

According to [14] there are 4 reasons why you should use a framework:

- a. Simplify and speed up the development of a web application.
- b. Because there is already a certain pattern in a framework (provided that the programmer follows the existing standard pattern) it is relatively easy for the maintenance process.
- c. Usually the framework has provided the facilities commonly used so that we don't need to build from scratch (eg validation, scaffolding, ORM, pagination, error handling, session settings, multiple databases, etc.).
- d. When compared to CMS, the use of frameworks is more free in development.

#### E. MVC (Model View Controller)

Since its introduction in the SMALL TALK programming language, MVC (Model View Control) has become a prominent idea in web application development because it isolates application creation into many aspects that go into its construction, such as the user interface, data processing, and the part that controls the application [15]. State that the application MVC policy consists of three components, as follows [15]:

- a. View is the part of the application that handles the view logic. When using HTML, this area is often only

accessible through the controller. To see what is happening with the application, use the View command. Fetch data from user and display it. Direct access to the model area is not available to users of this section. For manipulating data (inserts, updates, deletions, searches), as well as validation of controllers, model relies on relationships with databases as opposed to the view part.

- b. In this case, the controller is responsible for coordinating between the model and the view part of the application. The controller receives requests and data from the user to decide what the program will handle.

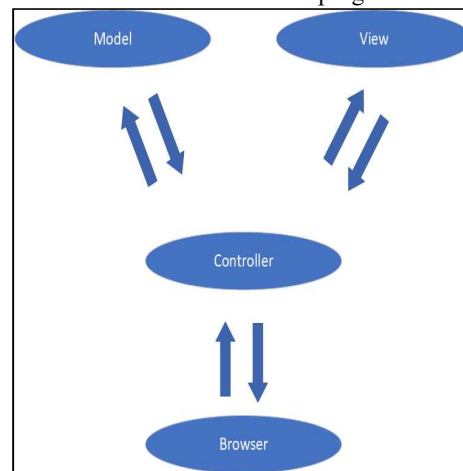


Figure 1. An overview of the MVC process flow (Source: [15])

#### F. Method of Collecting Data

The writer uses observation and interview methods in collecting data.

##### a. Observation

Collecting data or information by making direct observations by going directly to the field [16] (Office of the Education Office of Lombok Tengah Regency) on 07 February 2022-31 March 2022.

##### b. Interview

Data collection was carried out through direct interviews with officials from the Education Office of Lombok Tengah Regency, among others, Bpk. Harsono, S.pd, MM, functional employee in the Planning Division. As a consequence of this, reliable results can be achieved and appropriate sources of information can be accessed [17].

#### G. Analysis Method

To perform design analysis, the researcher used the PIECES method. James Wheterbe defines that the pieces method is an analysis of performance, information, economics, control, efficiency and service [18]. Where the author conducts a design analysis with indicators:

##### a. Performance

More effective and efficient than the current system, namely the manual system.

##### b. Information

Easier access to information

##### c. Economic

With this mail filing system, the cost of carrying out activities is cheaper.

##### d. Control

- With this system, users are more flexible in controlling the data that has been archived
- e. *Efficiency*  
With this system, mail data is stored more effectively and data retrieval becomes more efficient.
- f. *Service*  
Makes it easier to complete work.

H. *Object of Research*

The object of research being studied is the Official Mail Archive at the Education Office of Lombok Tengah Regency.

III. RESULTS AND DISCUSSION

A. *System Design Method*

Lack of complex features and fewer development restrictions. In other words, the Waterfall technique is the design paradigm used here [19]. Waterfall is a systematic and sequential technique that begins with the advancement of the system through analysis, design, coding, testing, development, and maintenance" says [10] [20].

B. *System Design*

In particular, the Lombok Tengah Education Office uses use case diagrams, activity diagrams, and class diagrams as part of the design and development of a Mail Archive Management Information System [21] [22].

C. *Use Case Diagram*



Figure 2. Use Case Diagram.

There are 2 actors in the use case diagram, which are in table 1.

Table 1. Tabel actor in use case

Actor	Explanation
Admin	Admin has access rights to view dashboard, manage mail types, manage fields, manage OPD, manage incoming mail and manage outgoing mail
User	Users have access rights to view dashboards, change passwords, download incoming mail, view incoming

Table 1. Tabel actor in use case

	mail, view outgoing mail and download outgoing mail.
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The explanation of each use case specification is described in table 2.

Table 2. Use specification case.

Use Case	Explanation
View Dashboard	View dashboard, on the dashboard there is a graph of outgoing and incoming mail by year. This feature can be accessed by all ROIe.
Manage Mail Type	Manage Mail Type include viewing, adding, changing and deleting mail type data. This feature cannot be accessed by users with other than admin roles.
Manage Fields	Manage Fields includes viewing, adding, editing and deleting field data. This feature cannot be accessed by users with other than admin roles.
Manage OPD	Manage OPD includes viewing, adding, editing and deleting field OPD data. This feature cannot be accessed by users with other than admin roles.
Manage User	Manage user includes viewing, adding, editing and deleting field user data. This feature cannot be accessed by users with other than admin roles.
Manage Incoming Mail	Manage incoming mail includes viewing, adding, editing and deleting field incoming mail data. This feature cannot be accessed by users with other than admin roles except viewing and downloading..
Manage Outgoing Mail	Manage outgoing mail includes viewing, adding, editing and deleting field outgoing mail data. This feature cannot be accessed by users with other than admin roles except viewing and downloading.

D. *Class Diagram*

Class diagram is a diagram that illustrates the connection between classes and also the object classes that make up the system. From this explanation, it can be concluded that the class diagram is a diagram that describes the structure of the system object [23].

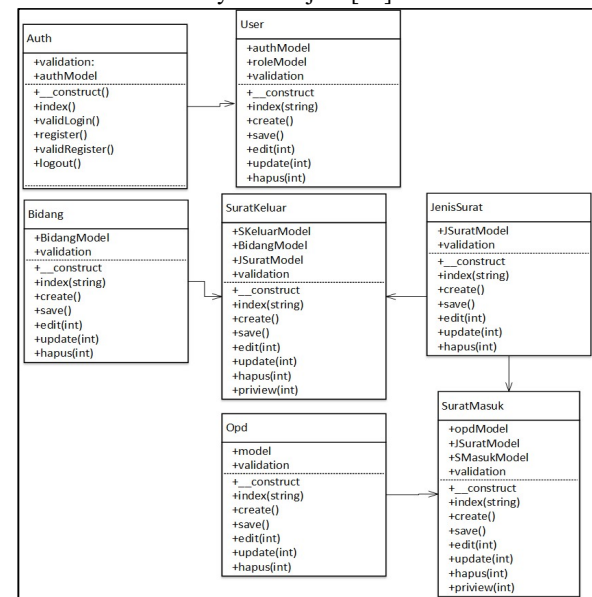


Figure 3. Class diagram.



E. Sequence Diagram

1. Login
2. Login adminan user

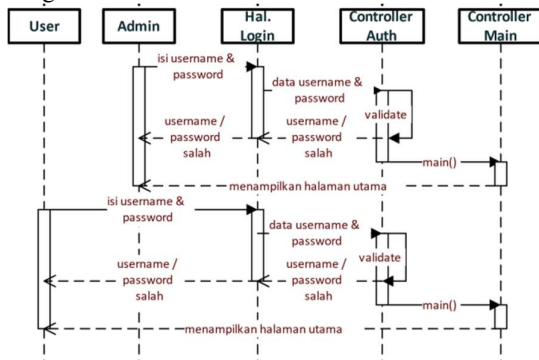


Figure 4. Sequence diagram login.

In figure 4. Describes the admin flow Login to the system.

3. Mail Type Features

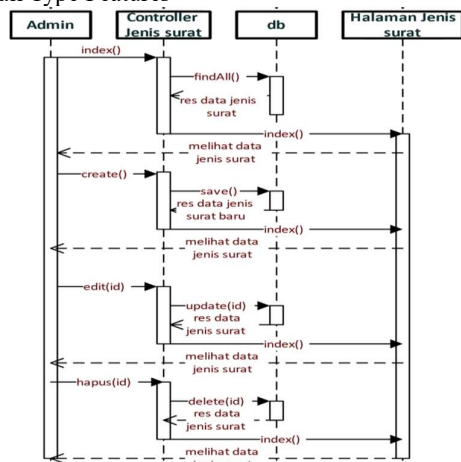


Figure 5. Admin mail type sequence diagram

Figure 5 describes the admin managing mail type data.

4. Field Features

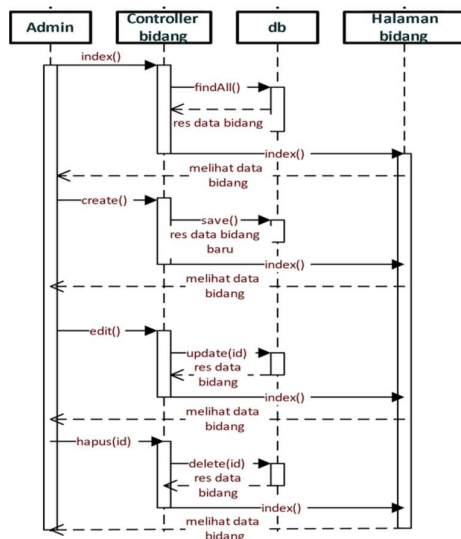


Figure 6. Field features sequence diagram

Figure 6 illustrates the flow of admin managing field data.

5. OPD Features

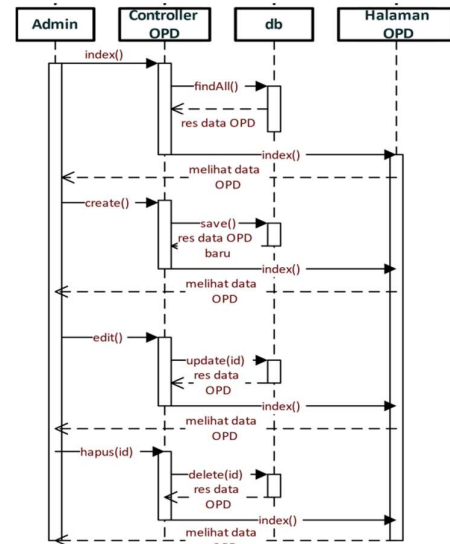


Figure 7. OPD features sequence diagram

Figure 7 illustrates the flow of admin managing OPD data.

6. User Features

- a. Admin manages user data

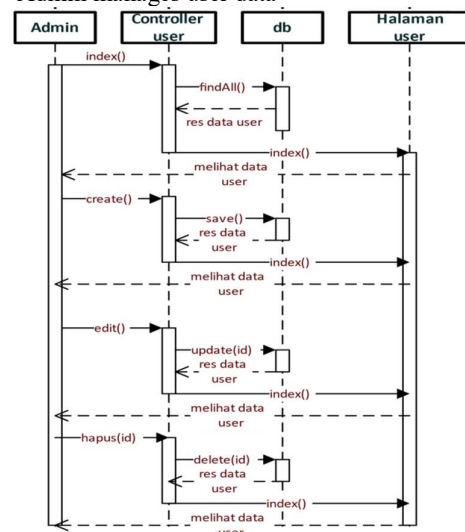


Figure 8. Admin manages user data sequence diagram

In Figure 8, it illustrates the flow of admin managing user data

- b. User manages password

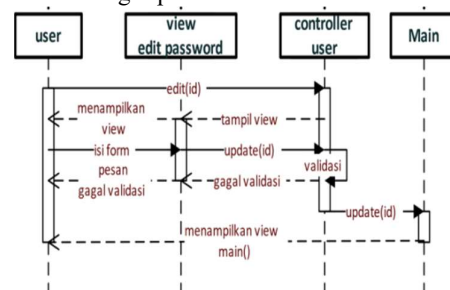


Figure 9. Editing user password sequence diagram

In Figure 9, illustrates the flow of a user changing or editing a password.



7. Incoming mail features

a. Admin manages incoming mail

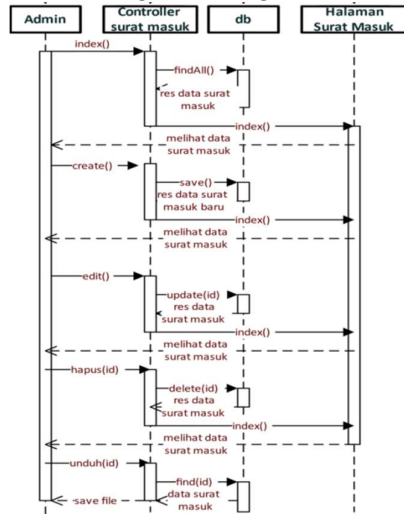


Figure 10. Manage incoming mail Sequence diagram

Figure 10 illustrates the admin flow managing incoming mail data.

b. Incoming mail feature on the user side

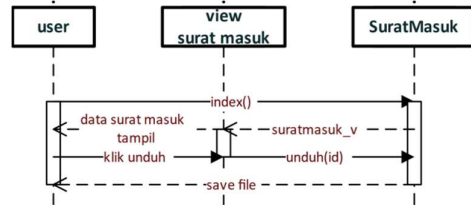


Figure 11. View and download incoming mail on the user side sequence diagram

In Figure 11, it illustrates the flow of users viewing and downloading incoming mail.

8. Outgoing mail features

a. Admin manages outgoing mail

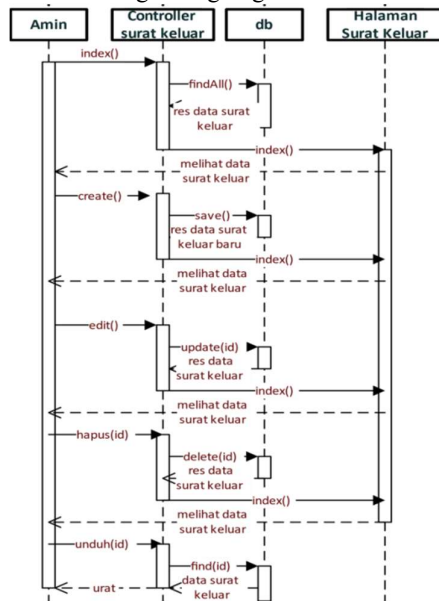


Figure 12. Admin manages outgoing mail Sequence diagram

Figure 12 depicts the admin flow managing outgoing mail data.

F. Relationship Diagram

As for the relationship diagram on the database of the Management Information System for the Mails of the Lombok Tengah Education Office.

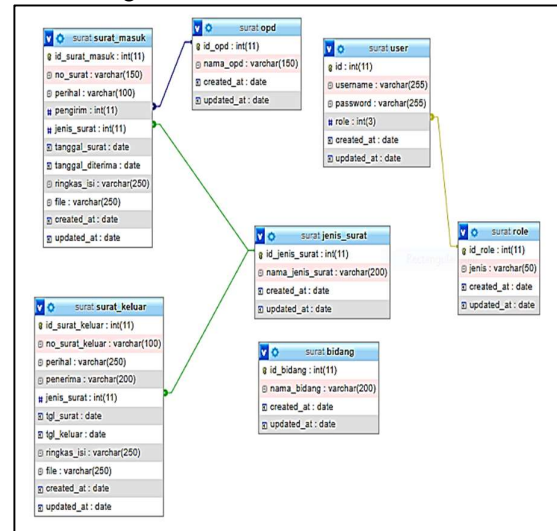


Figure 13. Relationship diagram of the Lombok Tengah Education Office Mail Management Information System.

Figure 13 illustrates that there are 6 related tables. The incoming mail table is related to the opd table and the mail type table. Then tabel user with tabel role. Outgoing mail table with mail\_type table.

G. System Interface

The following is a view of the system interface that has been created using the Codeigniter framework.

1. Login page

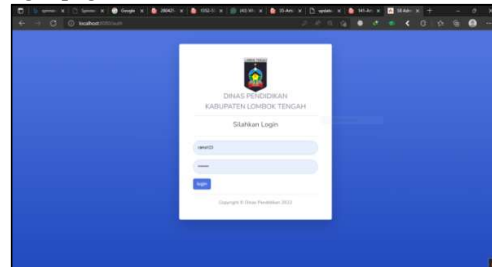


Figure 14. System login page.

Before the user can access the system, the user must first login by filling in the login form that has been provided.

2. Dashboard page

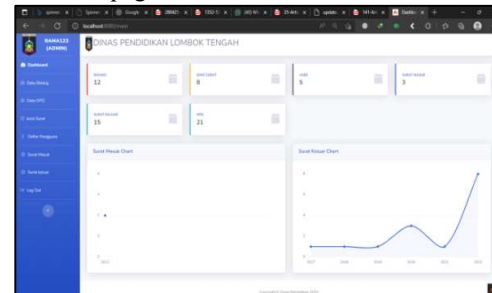


Figure 15. System dashboard page

After the user logs in, the system will direct the dashboard page. Where this dashboard page will display data on the number of incoming mail, outgoing mail, users, etc. As well



as displaying a graph of the number of outgoing and incoming mails per year.

3. Field data page

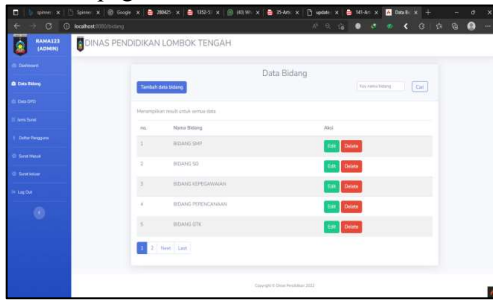


Figure 16. Field data page.

This field data page displays field data at the Lombok Tengah Education Office.

4. Add field form

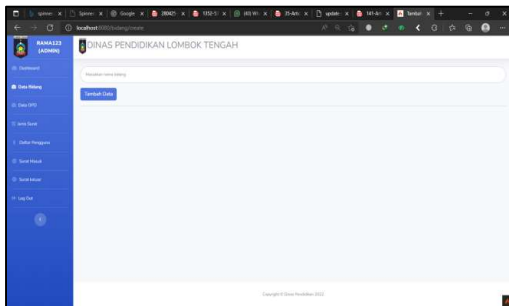


Figure 17. Add field form.

The add field form page is used to add field data.

5. User list page

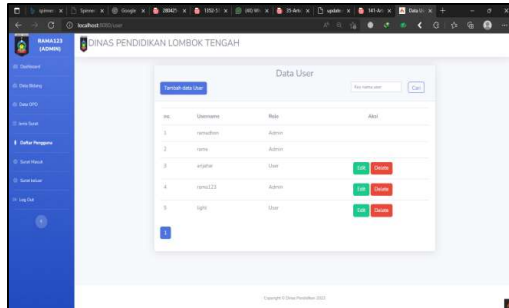


Figure 18. User list page.

This list page displays user data that is on the system.

6. Add user form page

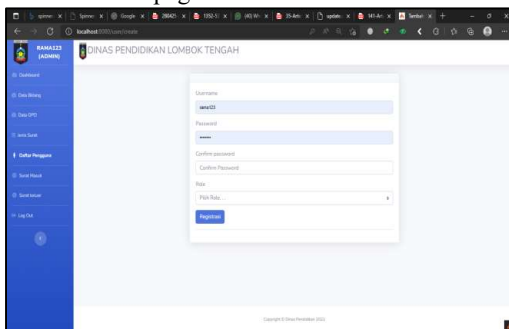


Figure 19. Add user form page.

The add user form page is used to add user data to the system.

7. Incoming mail list page

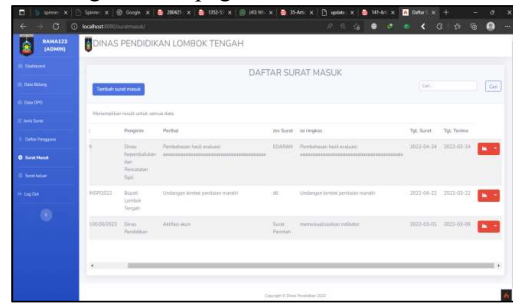


Figure 20. Incoming mail list page.

Incoming mail list page where this page is used to display incoming mail data.

8. Add incoming mail form page

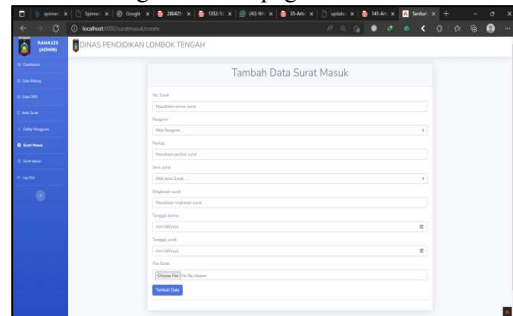


Figure 21. Add incoming mail form.

Where is the added login form page used to add incoming mail archivedata.

9. Outgoing mail list page

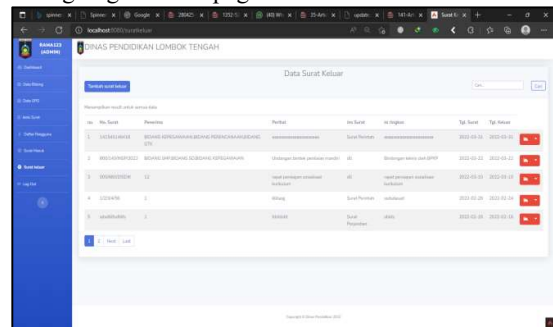


Figure 22. Outgoing mail list page.

Outgoing mail list page is a page used to display outgoing mail data.

10. Add outgoing mail data page

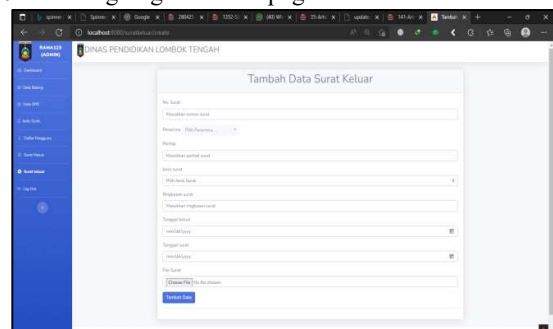


Figure 23. Add outgoing mail page.

The Add Outgoing Mail Data page is the page that is used to add outgoing mail data.

#### IV. CONCLUSION

Based on the results of the presentation, several conclusions were obtained, among others: From the observation, there are deficiencies in the management system for filing mails at the Education Office of Lombok Tengah Regency, therefore the author has designed a Mail Archives Management Information System which can be an alternative to the Mail Archive Management Information System at the Education Office of Lombok Tengah Regency. The system that has been created is capable of managing mail documents in PDF format with a maximum size of 10 Mb. This mail archive management information system can manage data such as: displaying data, adding data, editing data, downloading data and deleting data, so that it can manage data properly and efficiently. The system can perform searches so as to speed up the search for the desired data.

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