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Design of a Web-Based Letter Disposition Information System in the Population Control and Family Planning Sector of the Banyuwangi Regency Social Service

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Abstract

This research aims to design a web-based letter disposition information system for the Population Control and Family Planning Sector of the Banyuwangi Regency Social Service. Mail management which is still done manually causes various problems, such as delays in the disposition process, risk of data duplication, and difficulties in searching mail archives. To overcome this problem, this research uses field research methods supported by literature study as a theoretical basis. System development was carried out using the Software Development Life Cycle (SDLC) approach using a prototype model which includes communication stages, rapid planning, system modeling, prototype development, and system implementation. The system designed includes features for managing incoming mail, outgoing mail, digital disposition, and electronic archiving of letters. The design results show that this system is able to increase efficiency, accuracy and transparency in the letter administration process, and is expected to become the basis for system development in the next implementation stage.

Keywords: *information system, mail disposition, web-based, SDLC, prototype.*

1. Introduction

The continuous development of information technology makes it easier to obtain and manage data and information quickly, effectively and precisely [1]. Mail management is an important part of administrative activities which plays a major role in supporting the smooth operations of government agencies. Letters function as an official means of communication containing information, instructions and policies that need to be immediately followed up by the relevant parties. However, in the Population Control and Family Planning Sector of the Banyuwangi Regency Social Service, the process of managing the disposition and storage of letter archives is currently still carried out manually.

Implementing a manual system in mail management creates a number of problems, including delays in submitting dispositions, high risk of document loss, and difficulties when tracing mail data. Apart from that, recording carried out conventionally also has the potential to cause administrative errors and cause the disposition flow to be less transparent. Information technology plays a role as a supporting tool in various activities, especially in helping information management so that it can be carried out more effectively [2].

Along with the development of information technology, the use of web-based information systems has become a relevant opportunity to create neater, more efficient and integrated mail disposition management. To maintain security and ensure safety, and must be held accountable in the future or preserved regarding correspondence archives [3]. Through a web-based system, mail management can be done digitally, easily accessed by authorized users, and well documented. Therefore, this research is focused on designing a web-based letter disposition information system which is expected to be able to increase administrative effectiveness while supporting optimal agency performance. Archiving administration and letter management have a very important role, because letter management that is carried out well is able to maintain the availability of information in a document, even though this information is not necessarily needed when the letter is first received by the agency, institution or organization [4].

2. Literature Review

2.1. Information Systems

In general, an information system can be understood as a collection of components that function to collect, process, store and distribute information to support the decision-making process and management of an institution [5]. An information system can be understood as a unit consisting of technology, data and human resources which are integrated with each other to process data into valuable information. The resulting information is used as a basis for supporting the decision-making process and implementing organizational activities. In an administrative context, information systems play an important role in increasing the efficiency, accuracy and effectiveness of data management.

2.2. Disposition

Letter disposition is the stage of giving instructions or direction from the leadership to incoming letters so that they can be followed up by the relevant work units. Disposition is a direction given by leadership to staff or subordinates to follow up on a letter in accordance with their respective areas of duty and authority [6]. A well-organized disposition process will ensure that any information received can be processed on target and within the specified time. The implementation of a digital disposition system is considered capable of speeding up work flow while increasing accountability in mail management.

2.3. Web

The web is an information system that is connected to the internet and allows users to access various documents and resources via links (hyperlinks). Web-based applications utilize internet technology to provide services that can be accessed at any time and from anywhere [7]. In general, the web operates using the HTTP or HTTPS protocol as a data exchange medium, and presents information in the form of text, images, audio and video written using HTML. Access to web pages is done via browsers such as Google Chrome, Mozilla Firefox, and Microsoft Edge. In addition, the development of using various devices with various screen sizes requires that the web display be responsive so that it remains comfortable to use on various types of devices.

2.4. Letter

A letter is a means of written communication that is used to convey information or certain intentions from one party to another party. According to Prajudi Atmosudirdjo, a letter is a communication medium in the form of writing written on behalf of a person or position in an organization and addressed to a particular party [8]. Based on their nature, letters are divided into official letters and unofficial letters. Official letters are used for formal purposes, both between agencies and between individuals and institutions, while informal letters are used for personal or informal purposes, such as communication with family, friends or relatives.

3. Research Methods

3.1. Types of research

This research applies a field research approach combined with literature study. Field research is carried out to obtain data directly from research objects through observation and interaction with related parties, so that real conditions in the field can be better understood. Meanwhile, literature studies are used as support to strengthen the theoretical basis, concepts and references relevant to the research topic being discussed.

3.2. Metode Pengembangan Sistem

The system development method applied in this research is the prototype method. The prototype method is an approach to system analysis and design that involves users directly in the process of determining needs and developing the system to be built to suit the expected needs [9]. This approach begins with gathering system requirements from users, followed by rapid planning and creation of a preliminary design or prototype. This method consists of five stages, namely communication, fast planning, fast design, prototype construction, and delivery and feedback [10]. These stages are shown in Figure 1 as follows..

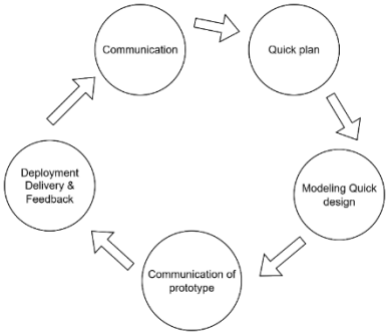

Fig. 1: System Development Method

a. Communications
At this stage, a communication process is carried out between developers and users to analyze the needs of the system to be developed. Analysis is carried out on the functional needs of each system user, including admin, department heads and secretariat. These needs include login activities, dashboard access, management of letter and disposition archives, input of letter and disposition data, and implementation of letter disposition..

b. Quick Plan
At this stage, the system design process is carried out in the form of a flow diagram. In system design, the author uses Flowcharts, Data Flow Diagrams (DFD), Entity Relationship Diagrams (ERD), and user interface design. This design aims to provide an initial overview of the flow and structure of the system to be developed.

c. Modeling Quick Design
At this stage, a more detailed design process is carried out from the initial design results to form a realistic system model. This stage includes creating a database structure, designing the main page display, as well as menu layout and system features so that they are easy for users to understand.

d. Construction of Prototype
At this stage, the process of making a system prototype is carried out based on the design that has been made previously. This prototype serves to provide users with a real picture of the system. After the prototype is complete, testing is carried out using the Black Box Testing method to ensure the main functions.

e. Deployment Delivery & Feedback
At this stage, system maintenance is carried out after it is implemented so that it continues to run well. Maintenance includes fixing discovered bugs, as well as feature updates so that the web-based mail disposition information system remains optimal.

4. Results and Discussion

4.1. Information Systems Design

The information system design in this research was carried out using the Data Flow Diagram (DFD) and Entity Relationship Diagram (ERD) approaches. DFD is used to describe how the system workflow runs, starting from data processing to interactions between users and the system in management activities and letter disposition. Meanwhile, ERD plays a role in designing the database structure by showing the relationships between the entities involved, such as mail data, disposition data and user data. By implementing DFD and ERD, the system design can be presented more clearly, systematically and easily understood, making it easier for developers to implement the letter disposition information system correctly and according to needs.

a. Context Diagram
Context Diagram is a general description of the system to show the relationship between the system and external entities and there is only one main process that represents the entire system. The Context Diagram flow can be seen in Figure 2 as follows:

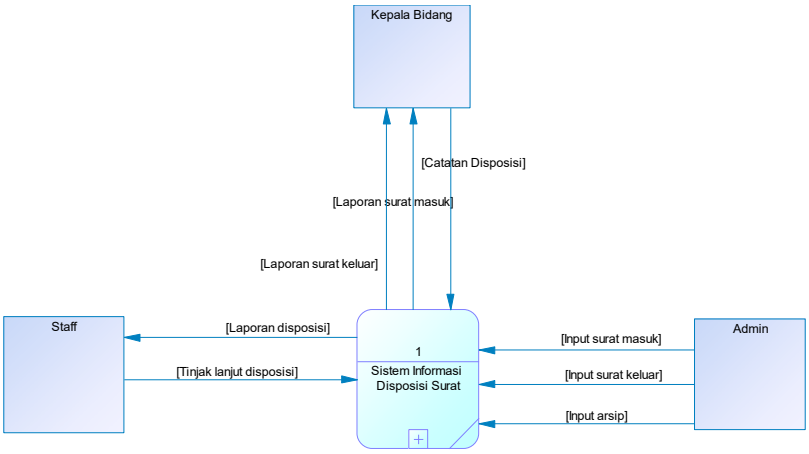

Fig.2: Context Diagram

b. DFD Level 1
DFD Level 1 is used to describe the main processes contained in the Context Diagram into several more detailed subprocesses. This diagram presents a clearer picture of the flow of data in the system, starting from the data received as input, the data processing stages, to the output produced. Apart from that, DFD Level 1 also shows the relationship between subprocesses and their relationship to the data store used. With this diagram, the system's working mechanism can be understood in more depth and structure. The DFD Level 1 flow can be seen in Figure 3 as follows:

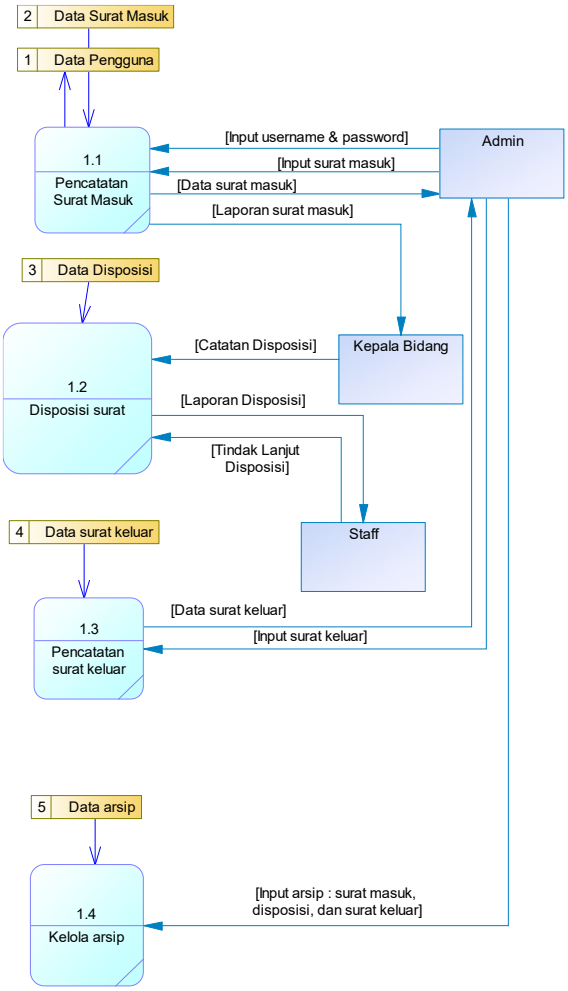

Fig. 3: DFD Level 1

c. Physical Data Model (PDM)

Physical Data Model (PDM) is an advanced stage of Conceptual Data Model (CDM) which is translated into technical form so that it is ready to be implemented in a database system. At this stage, the design is carried out by adjusting the needs of the database software used, such as MySQL. PDM presents details in the form of data types and character lengths for each attribute, as well as showing relationships between tables in the database. The design of the Physical Data Model for the letter disposition information system is shown in Figure 4 as follows.

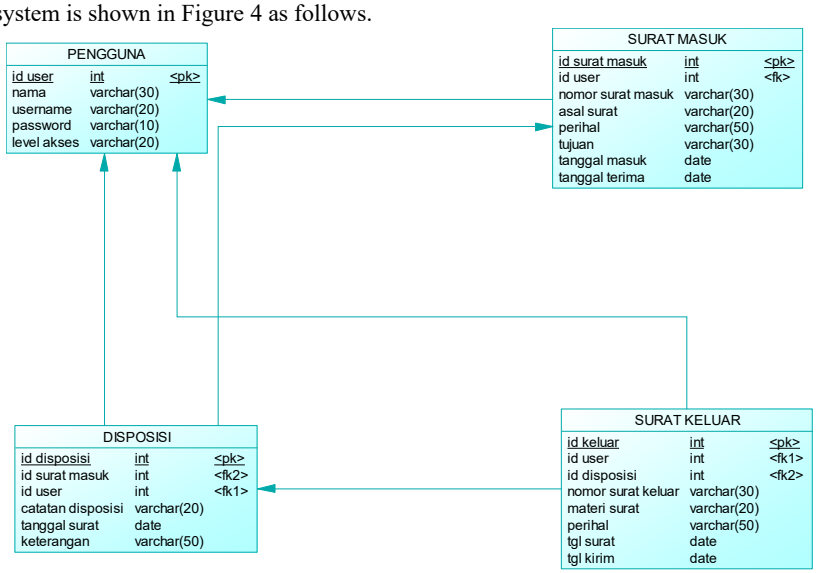

Fig. 4: Physical Data Mode

4.2. Interface Design

Interface design is focused on providing a system display that is friendly and easy for users to use. The interface designed includes a login page as initial access, a dashboard to display main information, as well as supporting menus such as incoming mail, outgoing mail, disposition, and mail archives. The interface design is adapted to user needs and habits, so that the system can be operated more easily, effectively and comfortably.

a. Login Page
The login page is designed to be simple but provides a user authentication process before logging into the system. On this page, there are two input columns in the form of username and password, as well as a "Login" button to access the application. At the bottom, as well as a remember me option for users who want to save login data. The design of this login page can be seen in Figure 5 as follows.

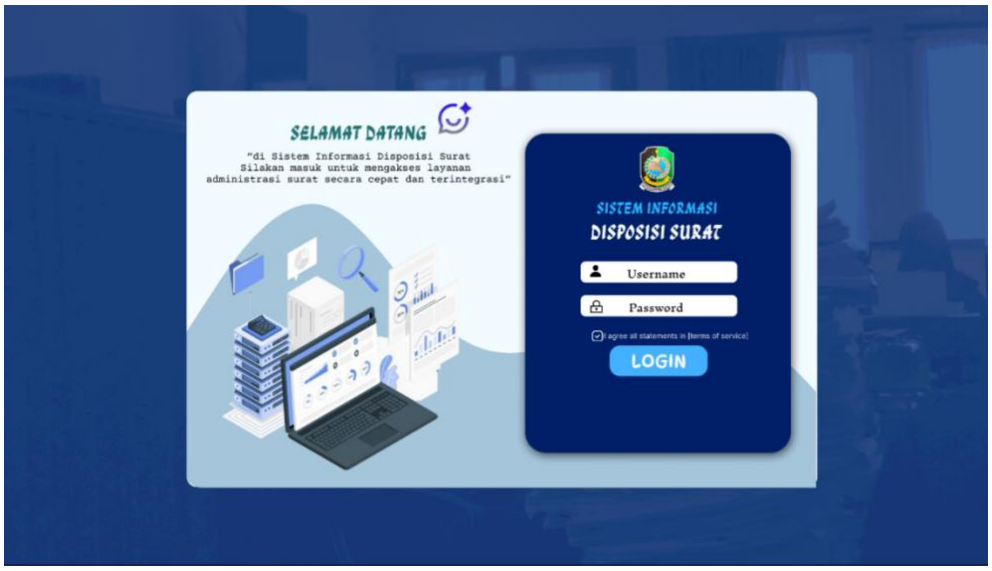

Fig. 5: Login Page

b. User Management Page
The User Management page on the Disposition Information System in the Family Planning Sector is used to manage and view stored user data. The main part of the page displays the title "User Data" along with a brief description of the function of user data, and at the top of the page there is a search column. This design can be seen in Figure 6 as follows.

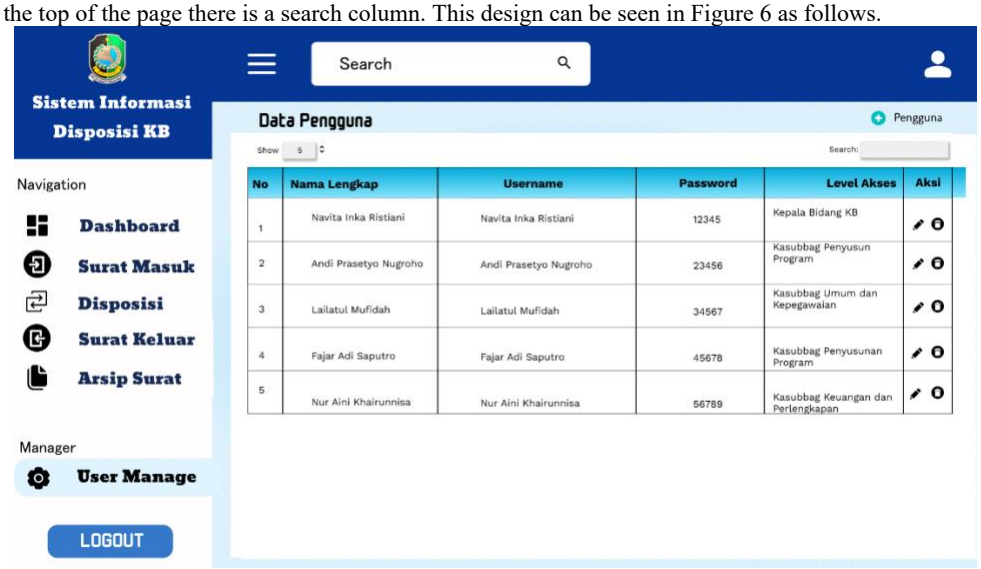

Fig. 6: User Data Page

c. User Input Page
The User Letter Input Form page on the Letter Disposition Information System in the Family Planning Sector is used to add outgoing letter data to the system. Users can complete the input process by pressing the Save button located at the bottom of the form. This design can be seen in Figure 7 as follows.

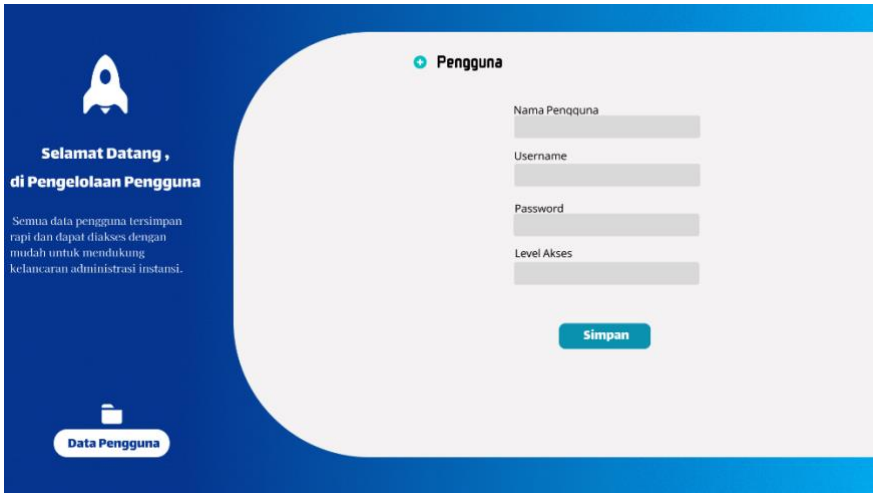

Fig. 7: User Input Page

d. Dashboard Page

The Dashboard page in the Letter Disposition Information System for Family Planning is designed as the main display that presents a summary of the activities of incoming letters, outgoing letters, and the letter disposition process within the Banyuwangi Regency Social Family Planning Service. At the bottom of the page, an information banner is displayed which aims to educate. The dashboard design can be seen in Figure 8 as follows.

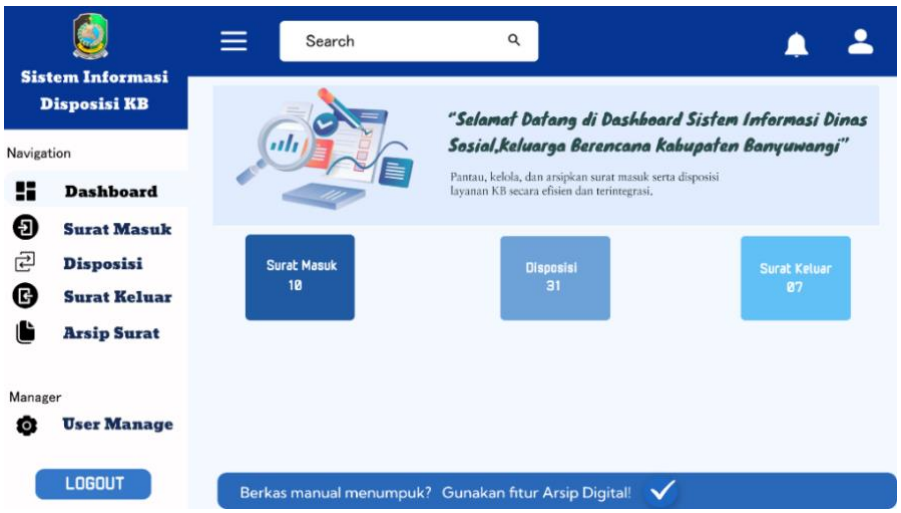

Fig. 8: Dashboard page

e. Incoming Mail Data Page

The Incoming Letter Data page in the Letter Disposition Information System in the KB field displays a list of all letters received. The main part of the page displays the title "Incoming Mail Data" with a structured incoming mail data table. This table contains

columns No, Entry Date, Letter Number, Subject, Letter Purpose, Letter Origin, and Received Date. The design of the Incoming Letter Data Page can be seen in Figure 9 as follows.

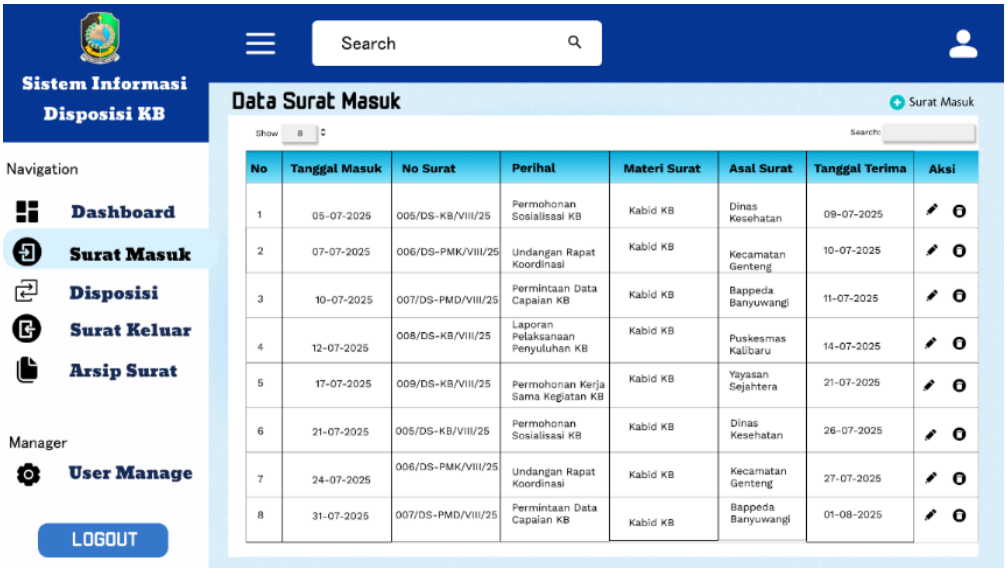

Fig. 9: Incoming Mail Data Page

f. Incoming Letter Input Page

The Incoming Letter Input Form page on the KB Letter Disposition Information System is used to add incoming letter data to the system. The design of this Incoming Letter Page can be seen in Figure 10 as follows.

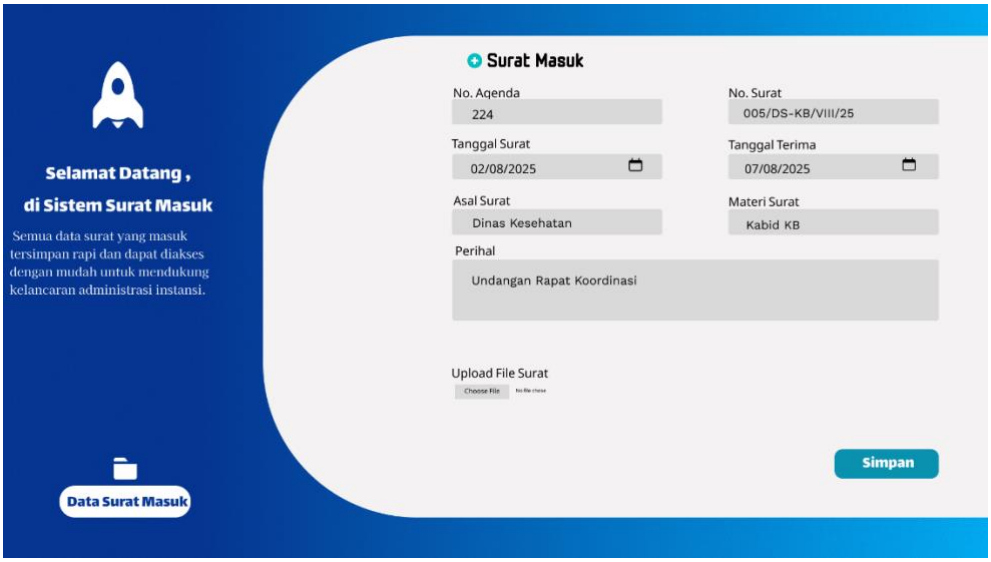

Fig. 10: Incoming Letter Input Page

g. Letter Disposition Data Page

The Disposition Data page on the Family Planning Letter Disposition Information System displays a list of all letters that have been disposed of at the Social Service in the Family Planning Sector, Banyuwangi Regency. This display makes it easier for

users to monitor and manage all mail dispositions quickly and efficiently. The design of the Disposition Data Page for this Letter can be seen in Figure 11 as follows.

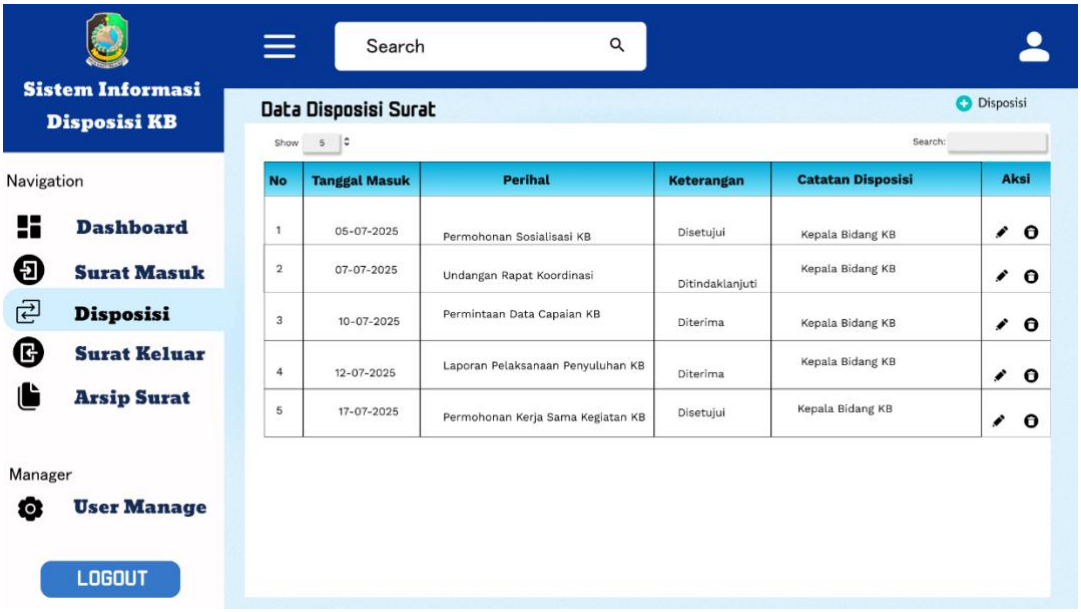

Fig. 11: Letter Disposition Data Page

h. Disposition Input Page

The Letter Disposition Input Form page on the Letter Disposition Information System is used to add letter disposition data to the system. Users can complete the input process by pressing the Save button located at the bottom of the form. The design of this Incoming Letter Page can be seen in Figure 12 as follows.

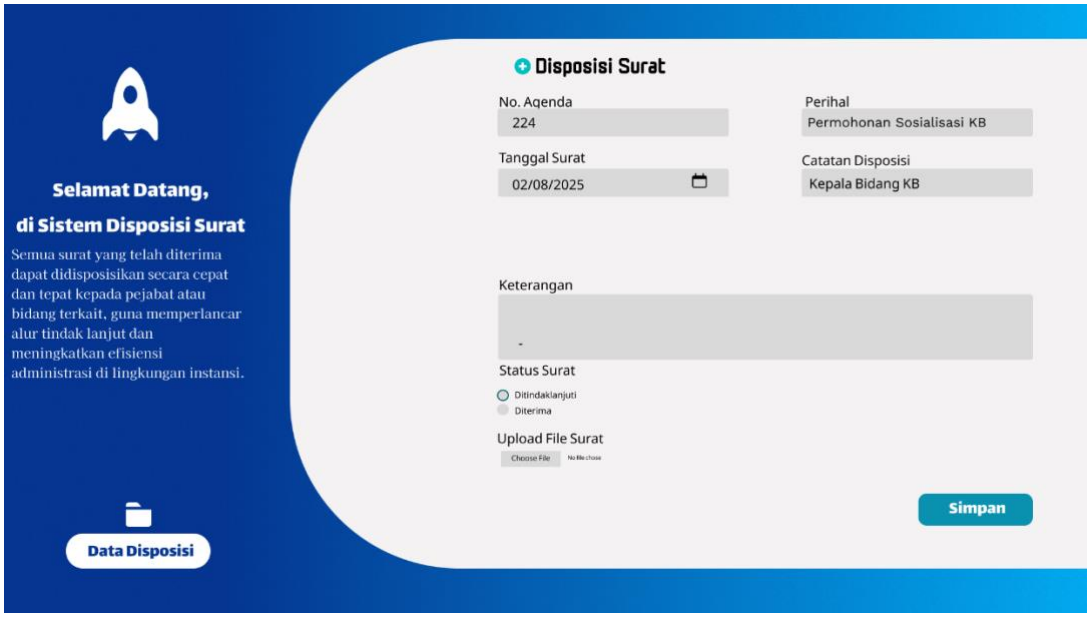

Fig. 12: Letter Disposition Input

i. Outgoing Mail Data Page

Outgoing Mail Data page on the Mail Disposition Information System to display a list of all outgoing mail. In the last column there are action icons for changing and deleting data. The design of the Outgoing Letter Data Page can be seen in Figure 13 as follows.

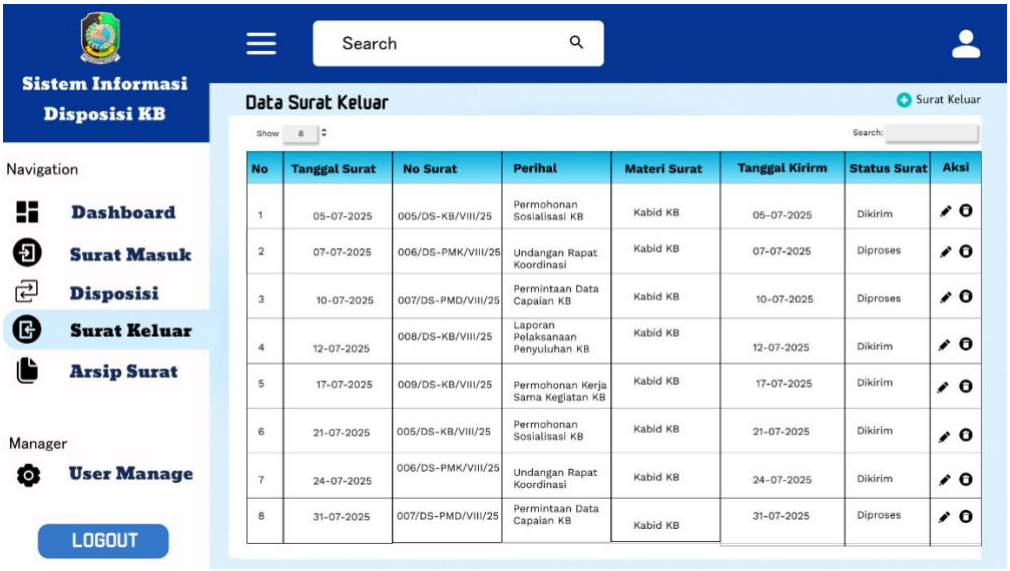

Fig. 13: Outgoing Mail Data Page

j. Outgoing Mail Input Page

The Outgoing Letter Input Form page on the Letter Disposition Information System in the Family Planning Sector is used to add outgoing letter data to the system. Users can complete the input process by pressing the Save button located at the bottom of the form. The design of this Incoming Letter Page can be seen in Figure 13 as follows.

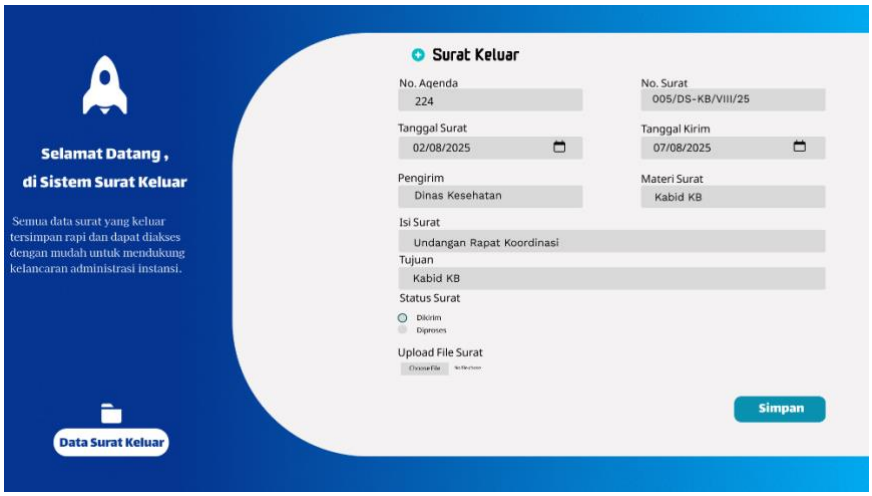

Fig. 13: Outgoing Letter Page

k. Letter Archive Page

The Letter Archive page in the Disposition Information System is used to manage and view stored incoming, outgoing and disposition data. The pagination feature at the bottom makes it easy for users to browse large amounts of data in a structured and efficient manner. The design of this archive can be seen in Figure 14 as follows.

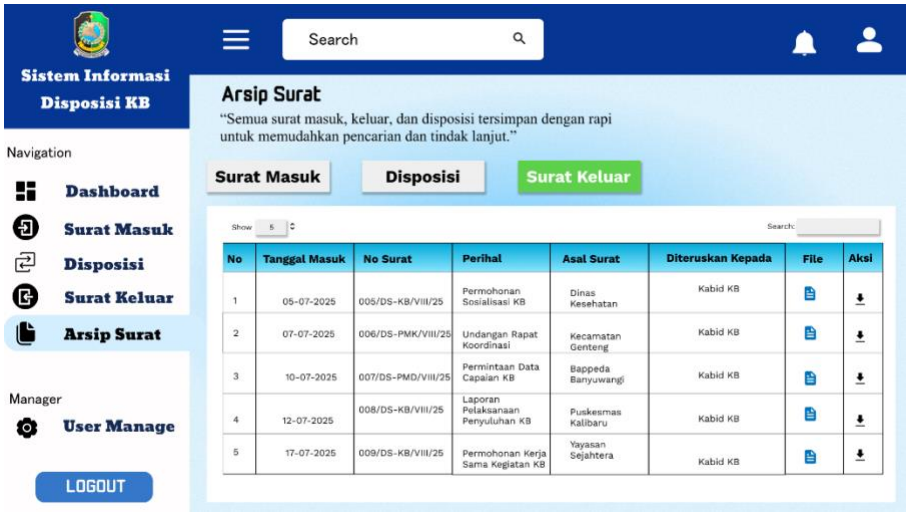

Fig.14: Archive Page

5. Conclusion

Based on the results of research conducted at the Social Service for Family Planning in Banyuwangi Regency, a design for a Web-Based Letter Disposition Information System has been produced which is capable of being a solution to the problem of managing incoming letters, outgoing letters, and the disposition process. This system is designed to facilitate digital recording, searching, archiving and disposition of letters, thereby reducing the risk of document loss, speeding up the delivery of information and increasing the efficiency of administrative services. By designing a structured system, it is hoped that this information system can be accessed flexibly and support more optimal administrative performance.

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