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Web-based Correspondence Management Information System at BPKAD Magelang City

1st Dwi Astuti, Sukris Sutiyatno, 2nd Sukris Sutyatno, 3rd Ahmad Fauzi Anggi Ariesta Kusuma
Sistem Informasi, Sistem Informasi, Teknik Informatika
STMIK Bina Patria, STMIK Bina Patria, STMIK Bina Patria
Magelang, Indonesia
[1]dwi.astuti@stmikbinapatria.ac.id, [2]sstiyatno@gmail.com, [3]fauziariesta@stmikbinapatria.ac.id

Abstract—This study aims to design a Mail Management Information System to become more organized. The research procedure used is the development of the Waterfall engineering method from Sommerville with stages including requirements definition, system and software design, unit implementation and testing, system integration and testing, operation and maintenance. The design used in this study is Data Flow Diagram while database design uses Entity Relationship Diagram (ERD). The result of BPKAD Magelang City this research is that a Mail Management Information System has been built at BPKAD Magelang City which can facilitate the process of recording and searching and save storage space
Keywords: *BPKAD Magelang City, Information System, Letter, Waterfall.*

I. INTRODUCTION

1.1 Background

Correspondence is a routine activity carried out by an organization where these activities include making letters, processing incoming mail data and outgoing mail data. Incoming and outgoing mail from the organization certainly requires a secure container and can accommodate so many letters as not to cause errors and can save time in collecting many letters.

In carrying out its duties, the Regional Financial and Asset Management Agency (BPKAD) cannot be separated from the correspondence process. The correspondence administration process at BPKAD Magelang City is grouped into two types, namely incoming and outgoing letters. The management of incoming and outgoing mail is still carried out conventionally, namely by writing in the agenda book. The process of mail flow and disposition that is still manual results in irregular mail management. This will be a problem if the mail agenda book is lost because information about mail data is also lost. The process of incoming mail flow after determining its disposition by the Head of the Agency is sometimes unknown to where the letter has been followed up or is only stored in a folder. Likewise, the problem of outgoing letters in terms of letter numbering because it is still done manually, there is a numbering error to be out of order, there are double numbers and missed numbers. This makes it difficult for officers when making incoming and outgoing mail reports.

Based on the description above, the researcher offers a solution to help solve problems in mail management by designing a Mail Management Information System at BPKAD Magelang City.

A system is a collection of people who cooperate with each other with systematic and structured rules to form a unity that carries out a function to achieve goals. [1]
According to Jacob (2012) in the book Introduction to Information Systems defines a system is a group of integrated elements with the same goal to achieve goals. The system is also a network of interconnected procedures, gathered together to carry out an activity or for a specific purpose. [2].
Management is a certain process consisting of planning, organizing, moving, and supervising that is carried out to determine and achieve certain goals by using humans and other resources. Thus, the focus of management is on the process of planning, organizing, mobilizing, and supervising to achieve cool goals by using human resources and other resources [3]
A letter of service is a form of formal or official communication in writing used by two or more parties to convey information, either individually or on behalf of the organization [4]. Judging from its nature, an official letter is a kind of essay or composition. Because in the official letter, the sending agency states its purpose and purpose, and explains what is thought and also felt. Judging from its form, an official letter is a conversation in written form. Judging from its function, an official letter is a means of written communication. Viewed as the most efficient, economical, and practical written communication tool.

1.2 Problem Formulation

How to build a mail management information system to manage incoming and outgoing mail in BPKAD Magelang City effectively ?

What is the impact of implementing an incoming and outgoing mail management information system at BPKAD Magelang City ?

1.3 Research Objectives

a. Can build a mail management information system at BPKAD Magelang City.
b. Can find out the impact of implementing an incoming and outgoing mail management information system at BPKAD Magelang City.

II. RESEARCH METHODS

2.1 Subject of Research Object

BPKAD Magelang City has the function of formulating and implementing policies in the field of regional financial and asset management. Implementation of evaluation and reporting in the field of regional financial and asset management. Secretarial administrative control of regional financial and asset management agencies. Located at Jalan Sarwo Edi Wibowo Number 2 Magelang. The subject of this study is the mail management information system, where this application is expected to help employees in the General and Personnel Subdivision in managing correspondence.

2.2 Data Collection Methods

The research methods used by researchers at BPKAD Magelang City are observations and interviews.

2.3 System Development Methods

In this study, the author uses the System Development Life Cycle (SDLC) Waterfall model development method for system development. The reason for using the Waterfall model in this development is because the stages in the development of Waterfall as in Figure 1 are so clear and ordered that it makes it easier to create a good information system starting from the definition of requirements to operation and maintenance.

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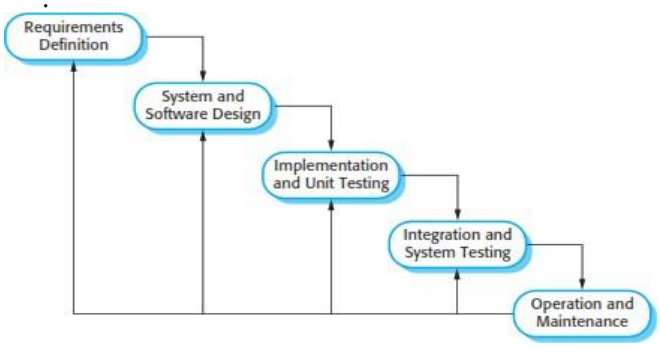


Figure 1. Stages of Waterfall Model System Development [5]

a. Requirements Analysis and Definition. Requirement Analysis and Definition is the stage of determining the features, constraints and objectives of the system through consultation with system users. All of these things will be set out in detail and serve as system specifications.
b. System and Software Design (System and Software Design) At this System and Software Design stage will be formed a system architecture based on predetermined requirements. In addition, identification and delineation of the basic abstractions of software systems and their relationships are carried out.
c. In this stage of Implementation and Unit Testing, the results of the software design will be realized as a set of programs or program units. Each unit will be tested to meet its specifications.
d. In this phase of Integration and System Testing, each program unit will be integrated with each other and tested as a whole system to ensure the system meets existing requirements. After that the system will be sent to the system user.
e. Operation and Maintenance: In this Operation and Maintenance phase, the system is installed and put into use. It also fixes errors not found at the build stage. In this stage, system development is also carried out such as the addition of new features and functions.

2.4 Analisis Sistem

The research was conducted using the PIECES (Performance, Information, Economy, Control, Efficiency, Services) analysis method, which is a strategy planning method used to evaluate performance, information, economy, control, efficiency, and services.

a. Performance: A running system can be concluded to be poor. This is because it is not proportional between the workload and the number of employees so that an employee has to bear an excessive workload. This led to some work not being completed within the day. So it is proposed to build an application that handles the management of incoming and outgoing mail.
b. Information (Information) Letter management that is still carried out by recording in the agenda book causes the information presented to be less than optimal. In addition, the passage of mail is also slow to be known. This is because recording on the agenda book requires more time in the search process. So that the system built can trace the journey of letters, both incoming and outgoing mail.
c. Economy Currently, the management of incoming and outgoing mail still uses the media of agenda books and disposition sheets. The use of paper media to print disposition sheets and disposition books requires a lot of budget. In addition, paper archive storage media requires a fairly loose place. Based on this description, that the system that is

running can be concluded not good. This is because there is still a lot of paper and record keeping that is still needed so it is not efficient in terms of storage and budgeting. The proposed system can be used in the long term, and can upload files in the form of Portable Document Format (pdf) so as to save manual storage space.

d. Control Recording incoming and outgoing letters still using agenda books, writing disposition sheets, distribution of letters by officers. This means that the relevant officers must be in the office to complete the mail management. Manual mail management cannot be accessed at any time by related employees, because it requires employees to be in the office. The management process starts from scheduling letters to distribution that has not been carried out regularly so that it will make it difficult to control data.

e. Efficiency (Efficient) The management of letters that are still recorded in the agenda book makes employees have to browse records one by one. In addition, manual distribution of mail allows mail to be tucked or lost.

f. Services Services to mail information are still done by manually searching in the agenda book. This takes time because you have to search carefully one by one for the data in the letter agenda book. Searching for mailing lists in the to-do book takes time. This can cause the contents of the letter to be delivered too late to the recipient of the letter.

2.5 Needs Analysis

a. Functional Needs Analysis. Analysis of the functional needs of the system needed to design a Mail Management Information System, namely the analysis of process needs, input needs, output needs and interface needs. The process needs needed in the Mail Management Information System are the login process, incoming mail management, mail disposition management, outgoing mail management and access rights management. The login process is used by the user to enter the system according to his access rights. Incoming mail management is the process by which mail processing personnel process incoming mail data. Mail disposition management is the process by which the Head of the Agency, secretaries and mail processing officers process the disposition data of letters. Outgoing mail management is the process by which mail processing personnel process outgoing mail data. Access rights management is the process by which mail processors process system access rights data for employees.

b. Non-Functional Needs Analysis consists of: :
   a. Hardware Analysis. The hardware used to build a mail management information system is a laptop with specifications Intel Inside Core i5 processor, 150 GB hard drive, mouse, printer and scanner.
   b. Software used to build mail management information systems are PHP programming language, CodeIgniter 3 framework, MySQL DBMS and Visual Studio Code
   c. Analisis Brainware
      User :P egawai BPKAD Kota Magelang
      Age :23 – 60 years old
      Access Rights: employee data input, incoming mail input, incoming mail disposition input, outgoing mail input, outgoing mail approval input.

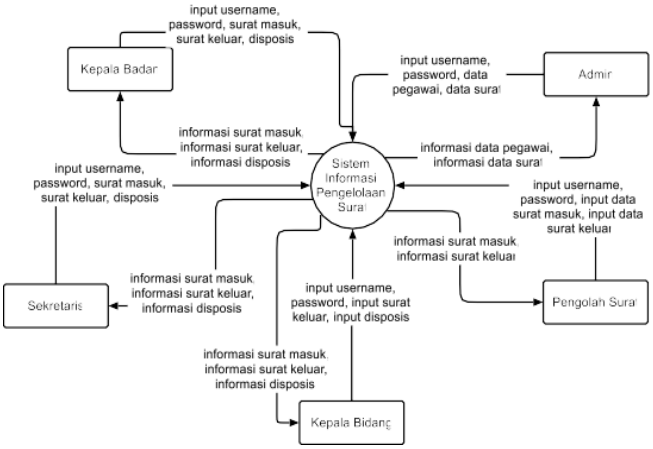
III. RESULT AND ANALYSIS

3.1 System Planning

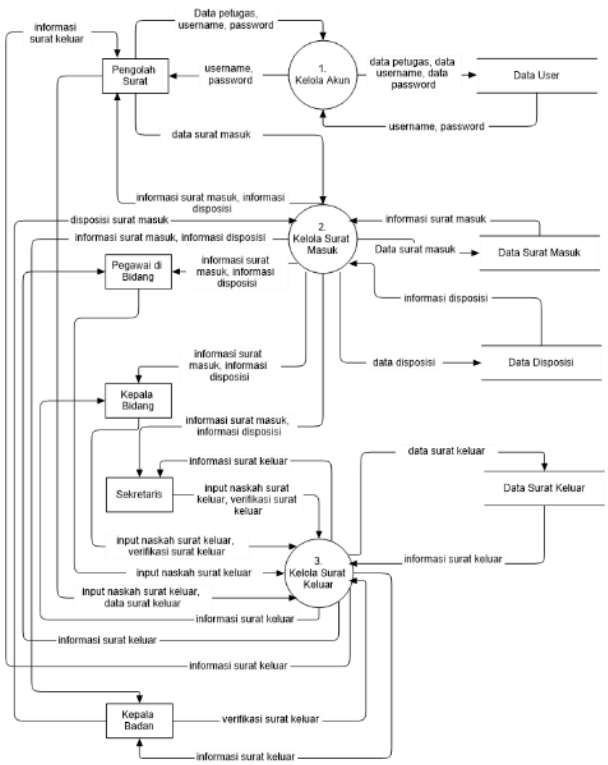
The system design used to design the mail management information system is DFD design, which includes Context Diagrams and DFD Level 1

3.2 Context Diagram

Figure 2 shows the context diagram of the mail management information system accessible to Admin users, Mail Processors, Head of Field (Kabid), Secretary, and Head of Agency (Kaban). Each user enters a username and password to be able to access the mail manager information system.



Gambar 2. Context Diagram



Gambar 3. DFD Level 1

The level 1 data flow diagram as illustrated in Figure 3, illustrates a more detailed data flow of processes on the context diagram. In the level 1 flow chart, there are 3 mail management processes, namely the account management process, the incoming mail management process, and the outgoing mail management process.

3.3 Implementasi Sistem

In the system design that has been made, it is implemented with the following system display:

Gambar 4. Form Login

Figure 4 shows the login form. There are username and password columns, equipped with a forgot password link that can be used if the user enters the wrong password or forgets the password or username. The forgot password link will connect to the email that has been inputted.

Gambar 5. User add menu display

Figure 5 is the display of the add user menu, where the admin can input data on prospective users of the mail management information system.

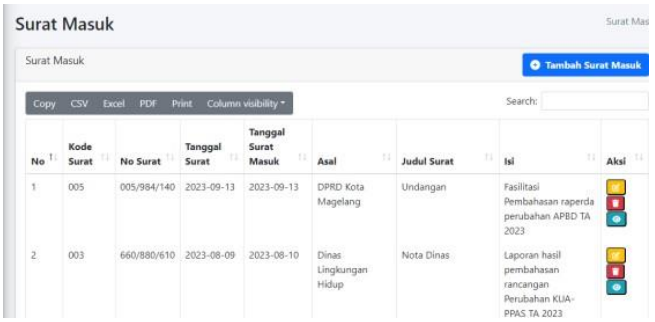


Figure 6. Incoming mail menu page

Figure 6 shows what the incoming mail page looks like. This page displays incoming mail data that has been inputted by the Mail Processor account.

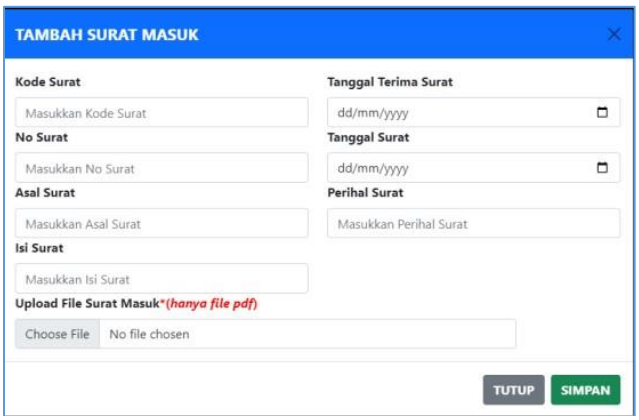


Figure 7. Add incoming mail menu display

Figure 7 shows the add incoming mail page. On this page, the Mail Processor inputs the new incoming mail data.

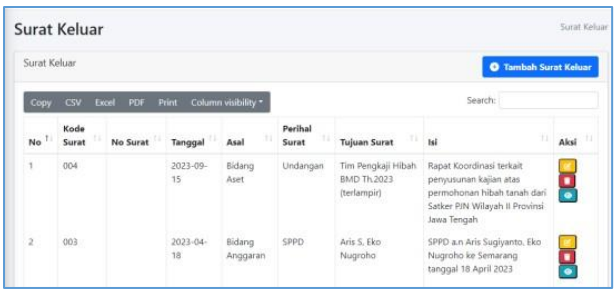


Figure 8. Outgoing mail menu page view

Figure 8 shows the outgoing mail page. This page displays outgoing mail data that has been inputted by the Mail Processor account.

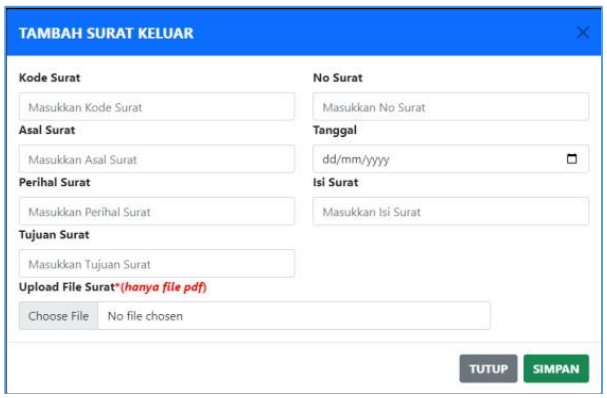


Figure 9. Add outgoing mail menu page view

Figure 9 shows the add outgoing mail page. On this page, the mail processor inputs the new outgoing mail data.

Figure 10. Mail disposition page view

Figure 10 shows the incoming mail disposition page. On this page the account of the Head of the Agency can view incoming letters and affix dispositions to designated officials

3.4 System Trials

Testing is carried out using black box testing to find out the function of the system is in accordance with the expected results or not. Based on 19 testing processes made by the author with a total of 33 scenarios, there were 27 successful scenarios and 6 unsuccessful scenarios. Thus, from the results of blackbox testing has a success rate of 27 x 100% = 81.9% and 33 it is concluded that the system can run well but still needs improvement.

3.5 User Evaluation

To evaluate system performance, a questionnaire was given with three respondents. From the results of the questionnaire calculation, it can be concluded that there are 67% of respondents who agree with the system built to assist in managing incoming and outgoing mail records at BPKAD Magelang City so that it becomes more organized.

VI. CONCLUSION

Conclusions that can be drawn from the Mail Management Information System at BPKAD Magelang City include:

A mail management information system has been successfully built, so that the recording of incoming and outgoing letters regularly and computerized at BPKAD Magelang City.

The implementation of the mail management information system at BPKAD Magelang City has a positive impact as evidenced by the test results as many as 67% stating that the mail management information system facilitates the process of recording and searching for letters.

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