Analysis and Design of Incoming Mail Filing Information Systems at universities, by Optimizing the Use of Google Drive

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Abstract. The purpose of this research is to create and implement an incoming mail archiving information system in a university environment by optimizing and integrating several applications from Google. For inputting and distributing incoming mail, Google Forms will be used, which will be integrated with Google Calendar to help schedule an online agenda for managing activities / events according to the contents of the letter. This research includes descriptive research with a practical and applicable approach, starting with data collection followed by the stage of developing an information system. The information system development stage is carried out as follows: 1). System Analysis, which is carried out based on the results of the data collection stage. The analysis is carried out by taking into account the existing problems, the purpose of building the information system, identification of data input, and identification of outputs which are the needs of the desired information report/display. 2). System Design. At this stage, a detailed information system design will be made based on the desired specifications at the analysis stage. 3). Programming, namely the process of making information systems 4). Testing, carried out the internal testing stage (unit testing and system testing). Based on the results of the research that has been done, it can be concluded that the incoming mail management system using the Google Drive application coupled with other applications can be used as an optimal and integrated management of incoming mail in universities. The impact of this application is that it can help the secretariat of the study program to manage and distribute incoming mail properly, for lecturers and study program leaders it can help remind activities or deadlines for work to be done.

Keywords: Information System, Archiving, Incoming Mail, Google Drive, Google Calendar

1. Introduction

Information systems are one of the needs for technology in this modern era. Information technology and information systems are developing very quickly, making all aspects of life always related to computer devices. In an organization, archives are one of the most influential sources of information. [1]

Letters are a means of communication to convey written information by one party to another. Its function is as a means of notification, written evidence, historical book reminders, and work guidelines. Correspondence activities in an organization or agency are important because they can support the development of the organization or agency from the administrative side. Important and confidential information related to an agency is contained therein. [2]

In an institution/company the letter according to the management procedure is divided into two, namely incoming mail and outgoing mail. Incoming letters are all types of letters received from other agencies and individuals, both those received by post and those received by courier using a

delivery/expedition book, while outgoing letters are letters that are complete (dated, numbered, stamped, and signed by the authorized official).) made by an agency, office or institution to be addressed or sent to other agencies, offices or institutions. [3]

Some of the problems encountered in administration when archiving and distributing incoming letters from internal and external parties at universities are in line with the development of cross-platform messaging applications such as WhatsApp (WA), especially during the Covid -19 pandemic as it is today, which is still implementing Work Form Home (WFH), the distribution of incoming mail is often through the WhatsApp application, either personally or through WhatsApp Group (WAG). The number of incoming letters distributed through WA to lecturers or to leaders in the Faculty or in the Study Program, often makes letters unreadable because they are struck by other messages. This resulted in both lecturers and leaders, often not knowing or forgetting the agenda and information disseminated through the letter.

The use of Google Drive to optimize mail archiving, especially in the field of higher education, has long been the focus of research. Research related to archiving and data security using Google Drive and its relationship with archiving system design include :
Barson Robert Murib, Hapsari Dwi Marta Lita, Annisa Widiarti who discussed the use of Google Drive for storage and security of school data [4], Faizatin, DN, & Mujayana, M, in their research discussed the use of the Google Forms application in archiving at the Faculty of Economics and Business. dynamics university [5], Untung Raharja, Ninda Lutfiani, Wahyu Setya Wardana, in their research have succeeded in scheduling the agenda for the implementation of the tridharma of higher education online using a google calendar [6].

Google is an American company that provides services and the internet. There are many products produced by Google, one of which is Google Drive. Google Drive itself is a storage service provided by Google to store data for users who have used a Google account. Users themselves can store data in the form of photos, videos, and documents.[4] In the process of archiving and distributing incoming mail in the university environment, we can use other products from Google, namely Google Forms. Google Forms offers a feature that can help with the digital archiving process. The advantages of Google Forms are that the filing process will be easy to do and the program is quite light. With the existence of electronic media such as Google Forms, the archive management process will become easier and will not take long so that it can facilitate the process of recovering the archives that will be needed [5]. In distributing incoming mail, by using Google Forms, we can email each lecturer/department according to the contents of the intended letter.

To remind / reminder of the schedule of activities that are informed in the incoming mail, we can use google calendar. Google Calendar is a time management web application from Google. The app was launched on April 13, 2006 and came out of beta phase in July 2009. Users need to have a Google Account to use this software. Still getting updates in terms of and appearance on this platform. This application can help to create an online agenda for Tridharma activities in Higher Education. There are several other uses apart from creating an online agenda. Of course, it is enough to use the Google account that we have.[6]

The focus of this research is to analyze and design the creation of an incoming mail archiving information system in the university environment by optimizing and integrating several applications provided by Google, namely Google Drive, Google Forms and Google Calendar.
The impact of this application is that it can help the secretariat of the study program to manage and distribute incoming mail properly, for lecturers and study program leaders it can help remind activities or deadlines for work to be done.

2. Methodology

In a process of writing scientific papers, it is necessary to have research methods that are useful to achieve goals and obtain accurate and reliable information needed by the author to carry out several stages in the research.[7] In this study, the author uses a descriptive method with a practical and applicable approach. The subjects in this study were secretariat employees, heads of study programs and faculties as well as permanent lecturers at the university.

The stages of research that will be carried out in developing this letter-making system can be seen in Figure 1 as follows:
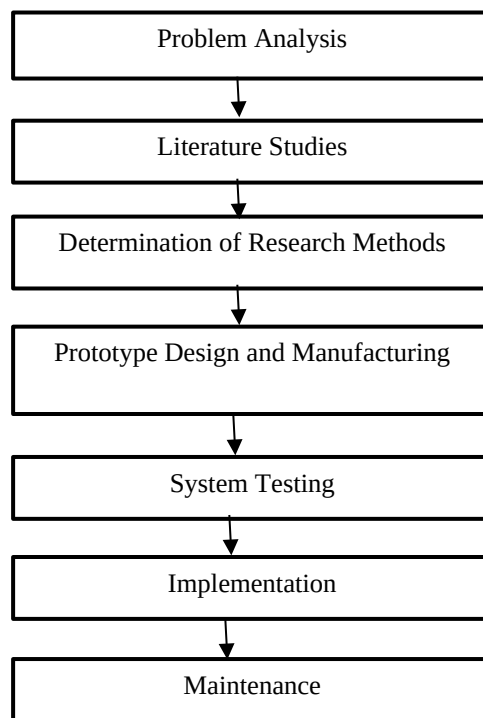
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Figure 1. Research Stage

3. Discussion and Results

3.1 Problem Analysis
One of the most important tasks in the system development phase is to determine the starting point for problems, opportunities and instructions that trigger the creation of the system.[8] that, often lecturers and leaders in study programs and faculties receive incoming letters which are distributed via WA to lecturers or to leaders in the Faculty or in the Study Program, making letters often unreadable because they are overwritten by other messages. This resulted in both lecturers and leaders, often not knowing or forgetting the agenda and information disseminated through the letter.

3.2 Prototype Design And Manufacture
Based on the problems that have been obtained, the researchers feel the need to develop an electronic mail filing information system, which is expected to assist in the process of archiving and distributing incoming mail, by optimizing and integrating several applications provided by Google, namely Google Drive, Google Forms, Google Spreadsheets. as well as google calendar.

3.2.1 Google Drive
The Google Drive application is a data storage application that can be used anywhere and anytime with a computer, laptop or mobile phone that is connected to the internet network. The Google Drive application provides a free storage capacity of 15 GB and is not only used for storage but is also used to share documents and make it easier to edit documents that have been received from other parties [4].
On this google drive later other supporting applications will be stored, an example of the google drive display that was created can be seen in Figure 2 as follows:
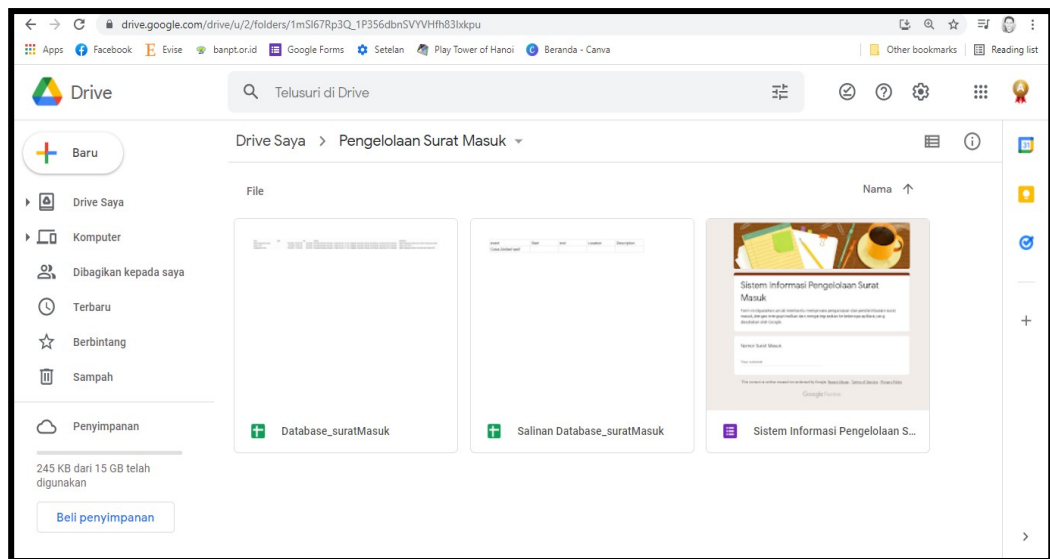
Figure 2. Prototype Google Drive

3.2.2   Google Form

Google Form is an application in the form of form templates or worksheets that can be used independently or together for the purpose of obtaining user information. This app works within Google Drive cloud storage alongside other apps like Google Sheets, Google Docs, and other add-ons. Google Form templates are very easy to understand and use, and are available in many different languages. The requirement to use it is only to have a Google account for the processor or form maker. [6].

The top view of the Google Incoming Mail Management Form that has been created can be seen in Figure 3 below:

Figure 3. Prototype of the top google form

In this google form, it consists of 3 main parts, namely:
1.   The main part of the Letter,
     In this section, the secretariat of the study program is asked to fill in the letter number, date of the letter, subject and source of the letter

2. Details of the contents of the letter,

   In this section, the details of the contents of the letter are entered including the type of activity, the purpose of the letter, and input the date and time of the activity, if the letter is an invitation letter to attend an activity. then the input data will be connected to Google Calendar to be used as a reminder to each email account according to the purpose of the letter.

3. Upload the incoming mail file

   In this section, it is used to upload incoming mail files and other attachments.

   The appearance of the google form that has been created in the main part of the incoming letter can be seen in Figure 4 as follows:

Figure 4. Prototype google form main part of incoming mail management

3.2.3 Google Spreadsheet

Google Sheets is an online spreadsheet application that lets you create and format spreadsheets and work with others at the same time. Google Drive Sheets, a document processing service application, especially for financial documents or tables that look simple, continues to be developed by Google. As a result, the application can now perform analytical document processing. Google also changed the name of the application to Google Sheets and embed various interesting features in it. [9]

In this incoming mail management system, the input made by the secretariat of the study program on the google form, will be stored in the Google Spreadsheet, an example of the Google Spreadsheet display that has been created can be seen in Figure 5 below:

Figure 5. Prototype of data for filing an application for practical work

3.2.4 Skrip AdWords

The AdWords script allows you to make automatic changes in your AdWords account. With JavaScript code, you can pause ad groups, and add keywords with a written script directly, rather than manually in your AdWords account.[10] In this incoming mail management system, to automatically send incoming mail files and add activity reminders to Google Calendar to email accounts according to the purpose of each letter, several adwords scripts are added in the google spreadsheet section. The appearance of the AdWords Script Prototype that has been done can be seen in Figure 6 below

Figure 6. Prototype of AdWords Script used

3.2.5 Google Calendar

Google Calendar is a reminder application that exists and is integrated directly with Gmail so that this will make it easier to remember shared activities. Google Calendar itself is a form of digital calendar that is in Google Mail itself. In Google Calendar we can create event events or to remind us if there is a task that is due soon. Google Calendar can also be used as a shared reminder tool. If the other digital calendars can only remind the owner of the gadget, it is different with Google Calendar. Google Calendar can also remind other users by adding email in the guests column. Google Calendar also allows for sending reminders to a group mailing list. [6] In this incoming mail management system, Google Calendar is used as a tool to create and remind an activity that must be followed. The google docs prototype display that has been designed can be seen in the following figure 7.
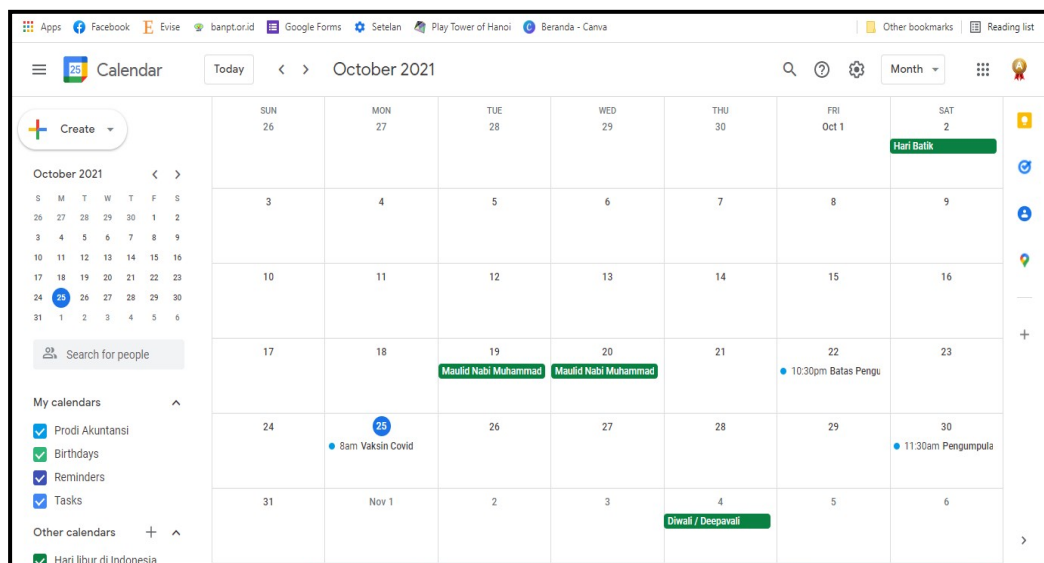

Figure 7. Prototype of google Calendar that has added activities according to incoming mail

3.3 System Testing

The system testing stage focuses on the internal logic of the software and on the functional externals, namely directing the test to find errors and ensure that the limited input will provide actual results that match the required results [11]. The following is an example of the display of input results on Google Calendar and then submitted, it will automatically send information on activities or time limits that must be followed or carried out. An example of the prototype for adding data to the Google calendar can be seen in Figure 8 below:
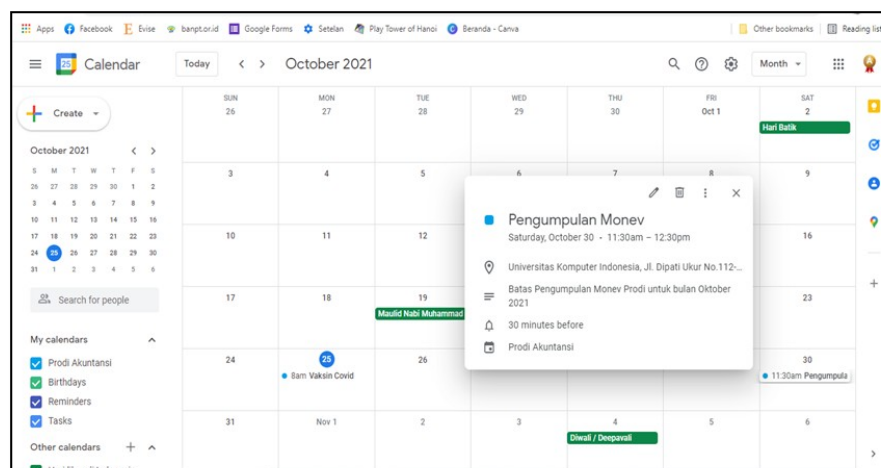
Figure 8. Prototype of adding activity data on google calendar to an email account according   to the purpose of the incoming letter

4. Conclusion

Based on the results of the research that has been done, it can be concluded several points, including: an incoming mail management system using the Google Drive application coupled with other applications can be used as an optimal and integrated management of incoming mail in universities. The impact of this application being made is that it can help the secretariat of the study program to manage and distribute incoming letters properly, for lecturers and study program leaders it can help remind activities or deadlines for work to be done.

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