# ANDROID-BASED APPLICATION OF LPPM STMIK PRINGSEWU ARCHIVES TO IMPROVE DATA INTEGRATION OF LECTURER PERFORMANCE

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**Abstract**
In the era of globalization, advances in information and communication technology affect human activities which have undergone many changes and developments. The development of science in the field of technology today has created new applications with more efficient technology productivity and costs. The rapid development of technology today has affected the work in various organizations. In order to support the performance in an organization, it is not only required the quality of reliable human resources but also required an appropriate technological advance. All of this aims to provide convenience for technology users in carrying out their work. Applications which are built can be used via mobile phones or laptops based on browsers to display information in the form of text and images which are accessed using the internet. This application development uses waterfall model information system design and research flow uses Fishbone Mapping Chart model. The development of an Android-based LPPM STMIK Pringsewu Archive Data Application will be integrated with Lecturer Data so that it will facilitate monitoring and archiving Lecturer Data and increasing the Lecturer Performance Index at STMIK Pringsewu. Integrated data focuses on activities related to research and community service.

## I.    INTRODUCTION

In the era of globalization, advances in information and communication technology affect human activities which have undergone many changes and developments. The development of science in the field of technology today has created new applications with more efficient technology productivity and costs. The rapid development of technology today has affected the work in various organizations. In order to support the performance in an organization, it is not only required the quality of reliable human resources but also required an appropriate technological progress. All of this aims to provide convenience for technology users in carrying out their work.

Information technology makes a job easier and faster to do. The benefits obtained from information technology in the field of education can help the data management process. The role of technology at this time has a direct impact on meeting organizational needs quickly, on time and accurately. The development of information technology has now entered into various fields of life. Therefore it cannot be denied that information technology can increase

the effectiveness and efficiency of an organization's work. Archives in Indonesia are regulated in the archival legislation. Archive retention schedule is prepared by each institution. An understanding of the Archives Retention Schedule is regulated in Article 1 point 22 of the Law of the Republic of Indonesia Number 43 of 2009 concerning Archives. The provision stated that "Archive Retention Schedule is a list containing at least the storage or retention period, types of records, and information containing recommendations regarding the determination of a type of archive to be destroyed, reassessed, or permanent and used as a depreciation guideline and archive rescue"[1]. Digital archives have now become the standard for more effective and efficient storage. The advantages of a digital archive system are that it does not require a lot of storage space, the cost is relatively cheap compared to manual archive systems and the data can be easily searched.

The development of technology which is getting better with the support of an adequate internet connection within the agency allows the integration of archiving methods running with a

system which can facilitate the performance of the data entry and exit section in managing archiving evidence of incoming and outgoing letters from an agency. The convenience which can be obtained is in terms of data retrieval and data security. The results of the LPPM STMIK Pringsewu performance report from 2015 to 2018, a lot of data is still inputted using a manual system. There are several weaknesses obtained from the manual filing system. If one of the archival records is lost it will slow down and interfere with the performance of employees in searching for archived data.

Based on archival data obtained at LPPM STMIK Pringsewu, LPPM STMIK Pringsewu has published student research with lecturers in 2015/2016 with a total of 32 research studies and 302 thesis research. Then in 2016/2017, the number of student research with lecturers was 44 studies and 422 thesis student research. In 2017/2018 the number of student research with lecturers was 39 researches and 380 thesis student research. The total research of students and lecturers in 2015 to 2018 was 115 studies and the total research of thesis students in 2015 to 2018 was 1104 studies. The titles of scientific articles or scientific works or works of art or books produced during the last three years by permanent lecturers whose fields of expertise were in accordance with the Study Program were 190 titles with 125 national level publications from 2015 to 2018 and 65 international publications titles from 2015 to 2018. The works of lecturers or students of study programs who obtained Intellectual Property Rights or works which received recognition or awards from national or international institutions for the last three years were 6 scientific works[2].

According to research conducted by [3], according to Article 1 number 2 of Law Number 43 of 2009 concerning Archives, archives are recordings of activities or events in various forms and media in accordance with the development of information and communication technology made and accepted by state institutions, government regions, educational institutions, companies, political organizations, community organizations, and individuals in the implementation of social, national and state life. According to research conducted by[4], digital archives are archives which are created and used in electronic form. Digital archives can come from printed archives which are converted to digital or archives which are born in digital form which are the result of media transfer from printed archives. According to research conducted by [5], the research has created a system of incoming and outgoing mail management, which means that this study is slightly different from previous research. This study discusses how to create a letter number. Outgoing and incoming letters have been well-systemized so that it is easier for them to use. According to research conducted by

[6], Electronic Archives is a computer-based archive storage system. If it is developed through the internet, it can be online so that it can be used by large organizations. The principle of computer-based and internet-based e-archives is that the computer is the embryo of an internet-based archival system. Before we design an internet-based filing system, we must understand a computer-based filing system. According to research conducted by [6], E-Archive is an archive which is held, processed, and stored in a media/intermediary using an electronic format to make it easier to view and manage the archive (Regulation of the Head of the National Archives of the Republic of Indonesia Number 20 of 2011 concerning Authentication Files).

In the research above, it can be concluded that the archive is a systematic process of arrangement, management and storage which is systematized using a certain system in its preparation. The archive system can facilitate the activities and goals of organizational institutions playing an important role in the course of the organization as a source of information and as a memory center for an organization. Archiving can be in the form of recordings or events in various forms and media which are in accordance with the development of information technology such as digital archives which can make it easier for users because they are well systemized. The filing system is a systematic process of storing and managing data. To build a digital filing system, we need an application which can facilitate data storage. The development of the android application aims to simplify the data search process so that it is precise and fast. To avoid problems such as data loss and data corruption, this study will develop a digitalization system for LPPM STMIK Pringsewu Archives which is integrated into Lecturers so that it will increase Lecturer Performance Index of STMIK Pringsewu. This Electronic Archive Application Development uses an Android application and a Mysql Database and is developed using the Waterfall method, so it is hoped that the archiving system can assist in finding the archived data sought more effectively and efficiently.

## II.   RESEARCH METHODS
### 2.1.  The Method of Data Collection
In Research and Strategies to collect data, the method of data collection plays a very important role which is needed to meet the required data needs. The methods of data collection carried out in this writing are:

***Observation***
It is a data collection technique which does not only measure the attitudes of the respondents, [7]. Observation is a technique of collecting data directly from the field which can be in the form of recording various situations to obtain information about

something observed. To find out the method of collecting and archiving research data from STMIK Pringsewu, data collection on observations made by the author includes the STMIK Pringsewu's Library and LPPM STMIK Pringsewu.

**Documentation**

Documentation is intended to obtain data directly from the research site, including relevant books, regulations, activity reports, photographs, documentary films, relevant research data [8]. To obtain the required data, the authors copied the data from the RIP STMIK Pringsewu Document and Standard 1 of the Vision, Mission and Objectives of STMIK Pringsewu.

**Interview**

Interview is a form of data collection technique which is widely used in qualitative descriptive research and quantitative descriptive research. Interviews can be carried out orally in face-to-face meetings individually or in groups [8]. The interview method in this study was through the Chairperson and staff of LPPM STMIK Pringsewu.

**Questionnaire**

Questionnaire is a list which contains questions about the research variables or objects under study.

These questions are based on indicators which are operational definitions of a research variable [9]. In this study, the authors conducted a questionnaire on lecturers and students to add information about the desired application system in facilitating the use of the application to be built.

**Literature review**

Literature review is an activity of collecting data and information from various sources such as books containing various theoretical studies for research materials, magazines, manuscripts, historical stories, and documents, as well as on digital media such as news from radio, television and other electronic media [10]. In this study, the authors took the source of information using books and previous research as a source of research conducted.

### 2.2. Running System

The document flow chart explains the flow which directs or shows how the process flow from archiving at LPPM STMIK Pringsewu has been running so far.

**Table 1.** Diagram or flow of running system
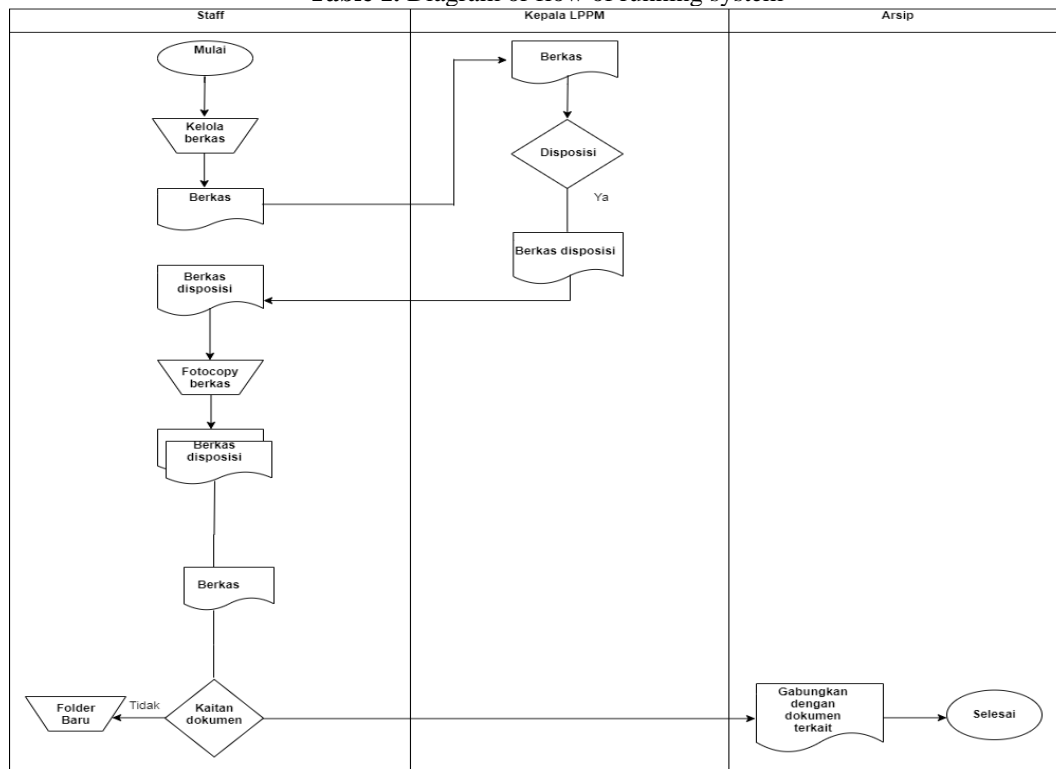


Running archiving system at LPPM STMIK Pringsewu is still using the manual method. Archiving still uses paper. In other words, there is no Android-based LPPM archiving system which can make it easier to input data and search data.

The process of archiving data which runs at LPPM STMIK Pringsewu is:

1.  Staff receives incoming files and then files are managed.
2.  Files having been managed are given to the head of LPPM for disposition.

3. If the files have been disposed of by the head of the LPPM, the files are given back to the staff.
4. After the staff receives the files having been disposed of, the files are reproduced by photocopying to produce several files.
5. Enter files by type of document. If the file to be archived is not related to the archived document, create a new folder. If the related file is in the archive document, combine it with the related file in the archive document.
6. Done.

Based on the results of the analysis, the weakness of the old system is that there are deficiencies in the service and information process so that it becomes ineffective and can hinder archiving work. The following are the disadvantages of an already running system:
1. Information systems cannot be received quickly.
2. It takes a long time and costs a lot
3. If data is lost or burned, it is difficult to restore it.

**2.3. System Development Method**

Waterfall is a systematic and sequential approach from the level of system requirements and then goes to the analysis, design, coding, testing/verification and maintenance stages [11][12]. The stages in system development are called Waterfall, because each stage will be carried out sequentially from planning, analysis, design, implementation and maintenance. Here is an overview of Waterfall.
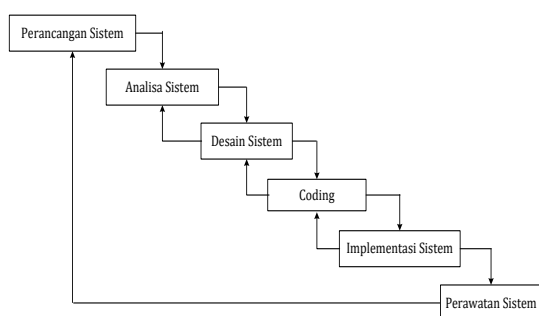


**Figure 1.** Waterfall Model [13]

The description according to the Waterfall picture above is:
a. System Planning
System planning is the initial stage where at this stage the authors identify the system to be used and developed, and determine the targets to be achieved.
b. System Analysis
System analysis is the second stage where problem identification, problem solving

proposals and system requirements analysis are focused on making software. At this stage, the authors describe a complete information system into its component parts which aims to identify and evaluate the problems and expected needs.
c. System Design
At this stage, the authors describe the design of the system to be built as a guide for making applications. The purpose of making this model is to obtain a good understanding of data flow and control, functional processes, operating behavior and the information contained therein.
d. Coding
At this stage, the authors apply the results of the design into a form which can be read by a computer. The results of the design began to be translated into machine language through a programming language.
e. System Implementation
At this stage the authors implement the system having been planned in advance.
f. System Maintenance
At this stage, authors carry out maintenance activities on the system aiming to maintain and improve the system to an acceptable condition.

**III. DISCUSSION AND RESULTS**
**3.1. Interface Design**
The design stage aims to meet the needs of system usage regarding a clear picture of the system design which will be created and implemented using Use Case Diagrams, Class Diagrams, Entity Relationship Diagrams (ERD).
**3.2. System Design**
The system design stage aims to provide a clear picture of system users with how the system design will be created and implemented. The following is a design which will be made for the input display[13], [14].

**Admin Input Design**
The admin login design is enabled by the admin to access and process data on the system. Before admin enters the system, admin must first input the username and password as admin validation. After the admin validation is complete, admin is in control of system data processing.



Figure 2. Admin Login Page Design

**Admin Process Design**
Admin process design needs to be designed in such a way that it can provide comfort and convenience to the admin during the process of inputting data into the application. The admin page design is:
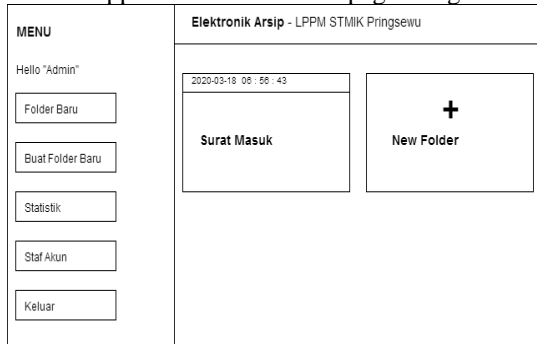


Figure 3. Admin Process Design

**Design of Adding New Folder**
The design of adding a new folder is an input design used by the admin to add a new folder in the master archive.
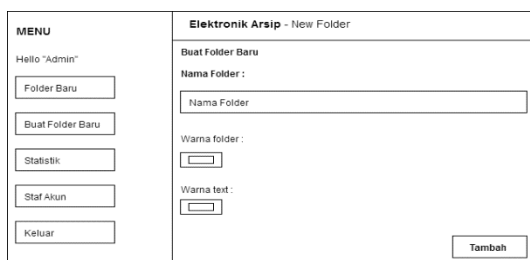


Figure 4. Display Design of Add New Folder

**Archive Upload Design**
The archive upload design is the input design used by the admin to upload files to be archived.
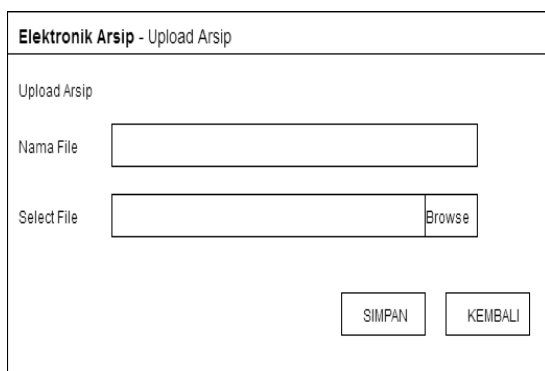


Figure 5. Display of Uploading Archives

**Designing an Output Dialog**
The design of the output display is an image design which describes the interface of the LPPM STMIK Pringsewu E-archive system interface. The design display built is specifically designed for responsive designs so that it can be used on all screen displays. The following page contains the master folder of the homepage design archive in the application.
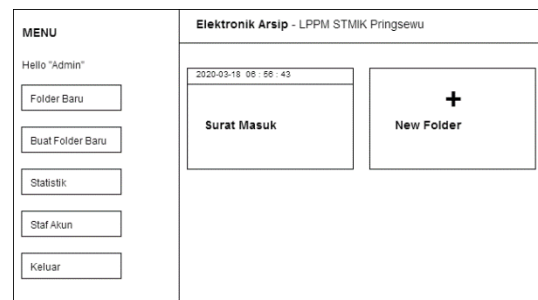


Figure 6. Home Page Display

### 3.3. Implementation
After the display design stage is complete, the next process is the program writing process carried out by translating the program design being made using programming language codes which have been determined and adapted to the design being made. Development of software for electronic archiving of data at LPPM uses the main programming language. The main programming languages used are Html, Css, Php and Javscript edited through the sublime text application as an editor application and xampp to run the results of the program which has been written. Interface implementation is the management of communication between users and the system. The interface serves as a bridge for inputting data into a system and communicating the features or menus available on the website so that users can easily use the system.

1. Implementation of Website Main Page
   The design on the main page produces the main appearance of the website as follows:



Figure 7. Display of the Website's Main Page

2. Implementation of Homepage
   The design on the admin page produces the display of the main admin menus used to perform admin data processing/ manipulation which can be done by simply selecting the menu needed as a bridge for data processing on the system.
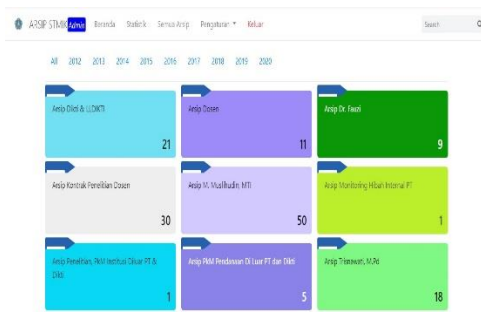
**119**

Figure 8. Home Display

3. Implementation of Pages to Create a New Folder

The design on the page to create a new folder produces a view which is useful for adding a new title to an archive file.
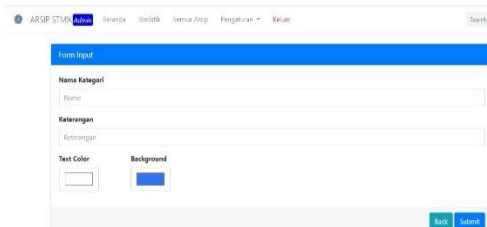

Figure 9. Display of Adding New Folder

4. Implementation of Archive Folder Page

The design on the archive folder page produces a customized view of a collection of archive files based on their respective titles.
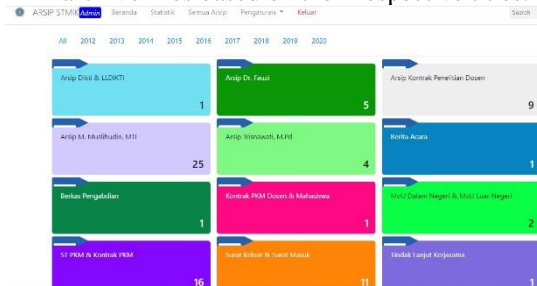

Figure 10 Display of Archive Folder

5. Implementation of Archive Statistics Page

The design of the display of the archive statistics page functions to be able to see the progress of the archived files per month.
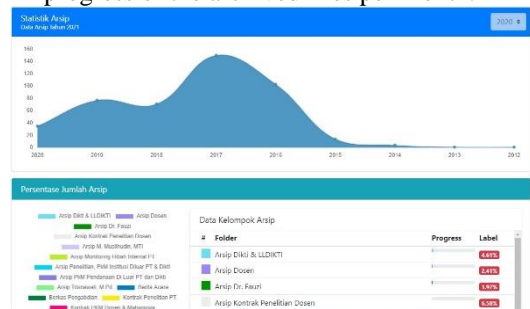

Figure 11. Display of Archive Statistics

6. Implementation of Account Staff Page

The design of the account staff page display serves to add anyone who can login to the e-archive application.
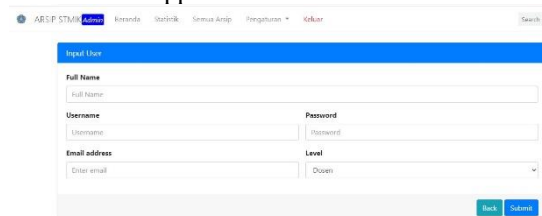

Figure 12. Display of Account Staff Page

**3.4. System Test Results**

Based on the research having been done and the system having been created for the LPPM STMIK Pringsewu e-Arsip, there are several advantages to the system. It can minimize loss and damage to archive files and the system is able to find archive files in the search tool quickly with the input process which is easy and effective.

**Black Box Test**

Testing is an important part of the software development cycle. Testing is done to ensure the quality and also find out the weaknesses of the software. The purpose of this test is to ensure that the software built is as expected. Testing this software uses the black box testing method.

Table 2. Black Box Application Test

| No | Test Application Menu | System | | Information |
|----|------------------------|---------|-------|-------------|
| | | Running | Error | |
| 1 | Admin Login | ✓ | | Displays the dashboard page. |
| 2 | Archive Folder | ✓ | | Displays archive files. |
| 3 | View Feature | ✓ | | Displays archive per-file. |
| 4 | Download Feature | ✓ | | Featuring a feature which can save archive files automatically after downloading. |
| 5 | Edit Feature | ✓ | | Displays features to edit file names, change dates and re-input files which have not been uploaded. |
| 6 | Delete Feature | ✓ | | Featuring a feature to delete archive files. |
| 7 | Upload Archive | ✓ | | Displays the menu used to input the archive. |

| 8 | Create New Folder | ✓ | Displays a menu to add a new folder name as well as to change the types of graphs in the statistics. |
|---|---|---|---|
| 9 | Archive Statistics | ✓ | Displays a graph display on each folder per year. |
| 10 | Account Staff | ✓ | Displays the account used to see which accounts can login. |
| 11 | Add Account | ✓ | Used to add a new account. |
| 12 | Exit | ✓ | Exit android e-archive. |

In black box testing in systems or software, what is tested is the input and output. With the various inputs given, we will know whether the system or software provides the output as we expect or not.

## IV. CONCLUSION

Based on research conducted by the development of Android applications for electronic archives of LPPM STMIK Pringsewu, to be able to design an Android-based E-Archive application, there are several things needed including making data flows on the system built with a structured model using Data Flow Diagrams. Furthermore, the system is implemented using a Java programming language with Android Studio. After the system is finished, a test is carried out using the Black Box System test to find out how far the system is running well. The Electronic Archive application makes it easy for administrative staff in providing access to lecturers so that they can easily integrate data between Tri Dharma data of tertiary institutions at LPPM STMIK Pringsewu and lecturers so that lecturers' performance can be controlled through the system, especially in the research component and community service.

## ACKNOWLEDGEMENT

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