

E-Archive based on web for Plaju ULU Sub-District

Eka Hartati^{1)*}, Ari Irawan²⁾, Fatmariansi³⁾, Wiza Yunifa⁴⁾

¹⁾²⁾³⁾⁴⁾ Institut Teknologi dan Bisnis Palcomtech

¹⁾eka_hartati@palcomtech.ac.id, ²⁾ari_irwan23@gmail.com, ³⁾fatma_r@palcomtech.ac.id,

⁴⁾wizayunifa@palcomtech.ac.id

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Abstract: The focus of this research is to design and develop a web-based e-archive system for the Plaju Ulu Sub-District to provide e-archive services. The system development method used in this research is the prototype method, while the system modeling utilizes Data Flow Diagram. The application was tested using black box testing, which observes the execution results through test data and checks the software's functionality. This research resulted in an e-archive application that provides information about various archives in the Plaju Ulu Sub-District, Palembang City. The application users include the service department, section head, and sub-district head. The testing technique used in this research is black box testing, which obtains input conditions for all functional requirements of the program. Based on the test results, including the admin feature, incoming mail feature, outgoing mail feature, employee data feature, incoming mail archive feature, and outgoing mail archive feature, all produced valid and successful outcomes.

Keywords: E-Archives, Data Flow Diagram, Black Box Testing; Application, Plaju.

INTRODUCTION

Archives are important sources of information that support administrative and bureaucratic processes. They serve as a vital source of data in an organization, not only providing information but also serving as a central memory and a necessary tool for planning, analysis, development, policy formulation, decision making, report creation, accountability, evaluation, and proper control. Proper archive management enables easy retrieval of required archives without consuming excessive time. Electronic archives are collections of information recorded and processed using computer technology as electronic documents that can be viewed and reused. Currently, the development of information technology is progressing rapidly. Information technology is highly needed in human life. One of the functions of information system technology is to assist or encourage human work to be more effective and efficient (Oktaviyana, Br. Aritonang, & br Sembiring, 2023). By using such technology, it enables offices to improve efficiency. Efficiency in the office encompasses aspects such as cost efficiency, labor efficiency, time efficiency, resource efficiency, market efficiency, and method or process efficiency (Rosidah & Arantika, 2018).

Archives are one of the important sources of information that can support administrative and bureaucratic processes (Fathurrahman, 2018). Archives, as one of the sources of information, are inseparable from management activities and play a crucial role in an organization. Archives, as a source of data from management activities within an organization, serve not only as a source of information but also as a repository of memories and a tool for supervision that is highly necessary for activities such as planning, analysis, development, policy formulation, decision-making, report generation, accountability, evaluation, and appropriate control (Putra & Nelisa, 2020). Proper and effective records management will facilitate the easy retrieval of necessary archives without consuming excessive time (Mustika, Chairunesa, Putri, & Pratama, 2018).

Electronic archives can be defined as a collection of information recorded and processed using computer technology as electronic documents, allowing them to be viewed and reused (Martini, 2021). Based on the research article Tobing (2019), it is evident that the current paper-based archive system in Plaju Ulu Palembang Subdistrict poses several challenges. Storing paper documents in large shelves requires a significant amount of space, which becomes increasingly problematic as the number of documents grows each day. This situation increases the risk of data loss, leads to time-consuming file searches, and makes the documents vulnerable to damage. To address these issues and establish effective, efficient, and productive organizational management, it is necessary to properly organize the archives through computerization. The research article mentioned the development of a web-based application for SPPD (*Surat Perintah Perjalanan Dinas*) in KPPN Medan II using the prototyping method. Implementing similar technological solutions in the Plaju Ulu Palembang Subdistrict could streamline archive

*name of corresponding author



management, enhance efficiency, and improve overall work processes. As a reference in the formulation of system development methods, prototyping and data modeling, specifically Data Flow Diagram, are used. Black Box testing on the Best Sales Selection System Application Using Equivalence Partitions Technique (Ningrum, Suherman, Aryanti, Prasetya, & Saifudin, 2019) As a reference journal for system testing in this study, the researcher utilized the system development method of prototyping with data modeling using Data Flow Diagram (DFD). DFD is a graphical representation of data flow through an information system, allowing for the visualization of processes within the information system from a data perspective (Soufitri, 2019). DFD can also be defined as a tool that emphasizes the flow of data and information (Herlambang & Setyawati, 2015). This study also employed system testing using black box testing, which is a method used to test software without considering its internal details. This type of testing focuses on examining the output values based on specific input values, without knowledge of the internal workings of the software (Hendri, Manurung, Ferian, Hanaatmoko, & Yulianti, 2020). This method is also one of the types of testing methods that treat the software as a black box, where its internal workings are unknown (Salamah & Khasanah, 2017).

METHOD

The system development method used in this research is the prototype method. Software prototyping is a system life cycle method based on the concept of a working model. Its goal is to develop a model into a final system. Ideally, a prototype serves as a mechanism to identify software requirements. When building a working prototype, developers should use existing program fragments or apply auxiliary tools (e.g., report generators, windows managers) that allow for quick display of the program (Sakban, Jemakmun, & Hutrianto, 2020). The stages of the prototype are as follows:

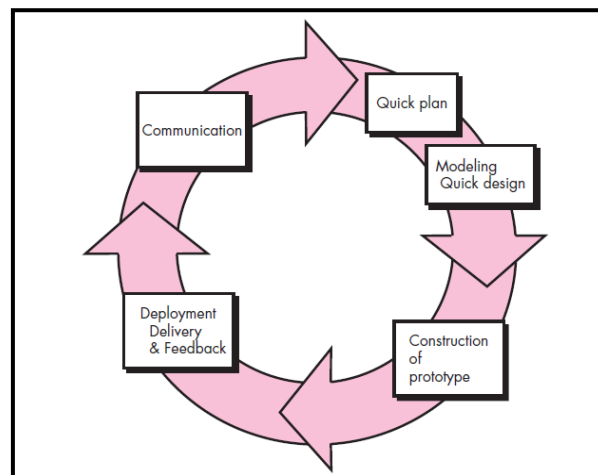


Figure 1. Prototype Model

Source: Pressman deep(Rusdiansyah, 2018)

1. **Communication:** In this stage, the researcher communicates to understand the system flow in the form of flowcharts and conducts observations and interviews to identify problems in the Plaju Ulu Sub-District.
2. **Quick Planning:** Rapid iterations of prototype development are carried out in this planning stage. Researchers create process modeling templates such as admin flowcharts, Data Flow Diagrams (DFD), and Entity Relationship Diagrams (ERD).
3. **Modeling Quick Design:** In this stage, the researcher creates interface designs and web displays.
4. **Construction of Prototype:** In this stage, the researcher builds the prototype and implements coding to create the E-Archive application based on the interface design created in the previous stage. After completing the application, the researcher conducts testing using black box testing to ensure its usability.
5. **Deployment Delivery & Feedback:** In the final stage, the researcher delivers the system ready for use by the Plaju Ulu Sub-District.

RESULT

Software testing is a critical element in ensuring software quality and represents an essential review of software specifications, system design, and coding (Nur Wahyu Rahadi, 2020). The researcher used black box testing as the software testing method. Black box testing focuses on the functional specifications of the software. With black box testing, software developers can create a set of input conditions that cover all functional requirements (Achmad Yani, 2020). The researcher conducted testing by examining incorrect or missing functions in the application. The testing of application features and buttons can be seen in Tables 1 and 2.

*name of corresponding author



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Table 1. List of Tested Systems

No	Tested Systems	Expected Results
1	<i>Login Form</i>	All users are able to perform the login process
2	Incoming Mail Page	Runs correctly without any errors.
3	Outgoing Mail Page	Runs correctly without any errors.
4	Employee Page	Runs correctly without any errors.
5	Logistics Page	Incoming orders are displayed when there is a need for delivery
6	Incoming Mail Archive Page	Runs correctly without any errors.
7	Outgoing Mail Archive Page	Runs correctly without any errors.
8	Search Menu	<i>Archive search function runs successfully without any errors.</i>

Table 2. Test Results

No	Tested Systems	Test Results	Conclusion
1	<i>Login Form</i>	As expected	Successful
2	Incoming Mail Page	As expected	Successful
3	Outgoing Mail Page	As expected	Successful
4	Employee Page	As expected	Successful
5	Logistics Page	As expected	Successful
6	Incoming Mail Archive Page	As expected	Successful
7	Outgoing Mail Archive Page	As expected	Successful
8	<i>Menu Search</i>	As expected	Successful

DISCUSSIONS

The results of system evaluation using usability evaluation.

This study used questionnaires as a measuring tool to measure learnability, efficiency, memorability, errors and satisfaction in usability. The questionnaire was distributed to 15 respondents in Plaju Ulu Palembang Village using answer choices ranging from 1 to 4 using Likert scale. Furthermore, validity and reliability testing were carried out and distributed respondents' answers. The total number of questionnaires distributed in this study was 15 respondents. The distribution of questionnaires was carried out offline and then given to respondents. The following is the number of questionnaire data disseminated and returned can be seen in Table 3.

Table 3. Description of the Respondent Questionnaire

No	Information	Sum
1	Questionnaire distributed	15
2	Return questionnaire	15
3	Knockout questionnaire	0
4	Valid questionnaire	15

1. Description of the Respondent

Described about the data of respondents who are application users in Plaju Ulu Palembang Village, the respondent data is grouped by gender. Can be seen in figure 2 and figure 3.

*name of corresponding author



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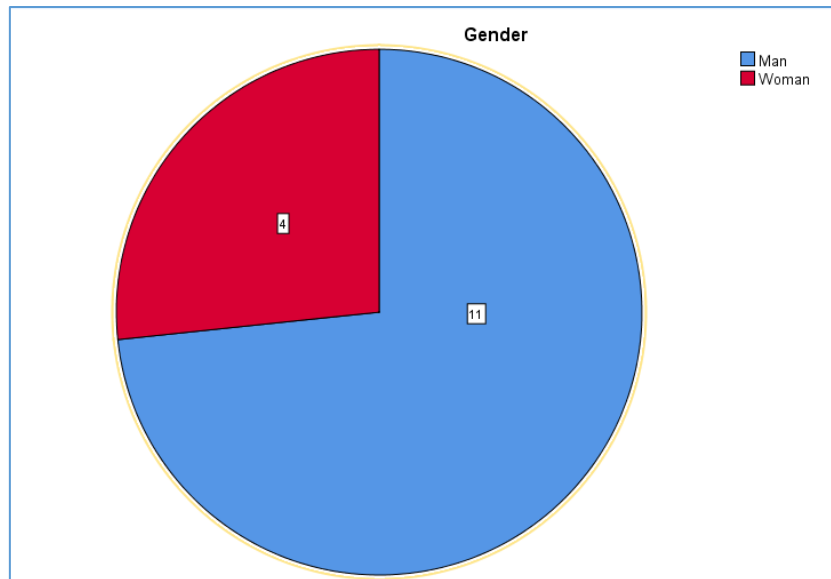


Figure 2. Distribution of Respondents By Gender

From figure 2 above, the distribution of respondents by gender can be seen that as many as 26,57% respondents are female and 73,33% are male. This indicates that most of the respondents to Plaju Ulu Palembang village are male. Described from the data of respondents who are application users in Plaju Ulu Village, Palembang, respondents are grouped based on the latest education.

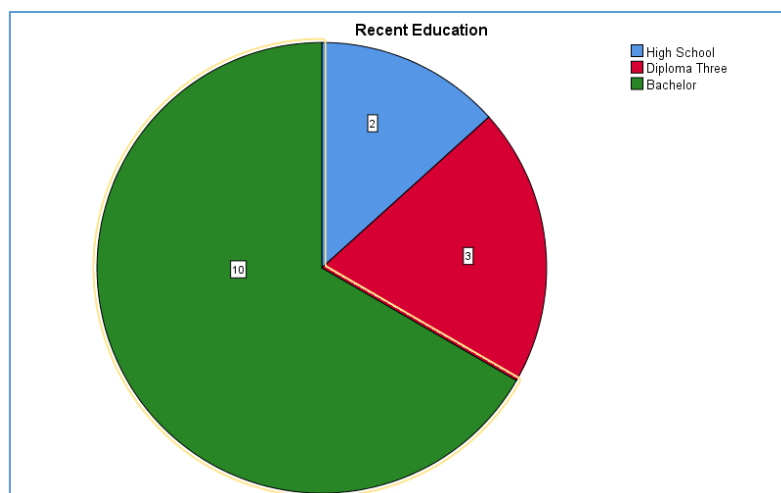


Figure 3. Distribution of Respondents Based on Recent Education

From figure 3 above, the distribution of respondents based on the last education can be seen that as many as 66.67% of respondents have a Bachelor education, 20% of respondents have a Diploma three education and 13.33% of respondents have a high school education. It is concluded that most of the respondents of Plaju Ulu Village Palembang had their last undergraduate education.

2. Validity Test Results

This study used a validity test using SPSS version 2. The criteria that must be met for a statement item to be valid if $R \text{ counts} > R_{\text{table}}$. This study used a significant level of 1% (0.01). After getting the results, then look at the distribution table of r_{table} values at the level of significance = 1% (0.01) calculated using SPSS 25 and get the r_{table} value of (0.6750). The results of validity testing for each statement can be seen in table 3 as follows:

Table 3. The Validity Test Results

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Variable	Code	rtabel	Corrected Item- Total Correlation	Status
Learnability	Lea1	0.6750	0.750	Valid
	Lea2	0.6750	0.683	Valid
	Lea3	0.6750	0.687	Valid
Efficiency	EFi1	0.6750	0.696	Valid
	EFi2	0.6750	0.738	Valid
	EFi3	0.6750	0.687	Valid
Memorability	Mem1	0.6750	0.722	Valid
	Mem2	0.6750	0.690	Valid
	Mem3	0.6750	0.721	Valid
Errors	ERR1	0.6750	0.758	Valid
	ERR2	0.6750	0.770	Valid
	ERR3	0.6750	0.723	Valid
Satisfaction	St1	0.6750	0.756	Valid
	St2	0.6750	0.729	Valid
	St3	0.6750	0.752	Valid

According to the table above, of the 15 statements made, all statements are declared valid, because the result of Corrected Item- Total Correlation > the r value of the table is 0.6750 so that there are no unused statement items.

3. Reliability Test Results

This study used a reliability test, which was used to determine the level of consistency of a questionnaire. In reliability testing, research statements are said to be reliable using the Cronbrach Alpha technique, if the reliability coefficient at the level of significance is $1\% > 0.6$, then the statement is considered reliable and vice versa if the value is smaller. Then to find out the results of data calculations in trust and consistent or reliable in SPSS can be considered in the Reliability Statistics table. The test results can be seen in table 4 as follows:

Table 5. Reliability Test Results

No	Variable	Cronbach's Alpha		Status
		Standard	Result	
1.	Learnability	0,6	0.650	Reliable
2.	Efficiency	0,6	0.702	Reliable
3.	Memorability	0,6	0.731	Reliable
4.	Errors	0,6	0.763	Reliable
5.	Satisfaction	0,6	0.780	Reliable

It can be seen that the results of the questionnaire reliability test on each statement above > 0.6 , so that all variables are declared reliable. All respondents' answers on average answered very agreeably and agreed from the 5variable given, it can be concluded that the e-archive application is suitable for use and is very helpful for the village in archiving documents in Plaju Ulu Palembang Village.

CONCLUSION

The research has resulted in an e-archive application that efficiently manages storage space, facilitates data management, and streamlines archive retrieval and monitoring. Based on the overall testing conducted using black box testing, where the functions and buttons of the application were tested, all the outcomes met the expectations, and all tests were successful. In conclusion, the e-archive application meets the needs of the users by improving storage efficiency, facilitating data management, and simplifying archive search and monitoring. Furthermore, it is recommended to further enhance the application by adding specific features. Future research could focus on user satisfaction with the developed system.

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