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Web Based Archives at PT Dupoin Palembang Branch as an Effort to Transform the Manual System to the Electronic System

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ABSTRACT

In Indonesia, digital transformation has become a national strategy encouraging both public and private institutions to adopt information technology to improve efficiency and accountability. One important form of this transformation is the implementation of a web-based digital archiving system that enables centralized document storage, management, and access. Web-based systems are preferred due to their flexibility, multi-device accessibility, and cost efficiency. In the context of document management, such systems provide fast document retrieval, systematic classification, and enhanced data security through user authorization. This research identifies problems at PT DUPOIN Palembang Branch, where document archiving is still handled manually using physical filing cabinets, leading to inefficiency, risk of data loss, and human error. The purpose of this study is to transform the conventional archiving process into a web-based digital archive system to improve work effectiveness and service quality. Data were collected through observation, interviews, and documentation. The results are expected to show that the implementation of a web-based archive system allows documents to be accessed online anytime and anywhere, supports remote work conditions, and improves document traceability through metadata management. This system is anticipated to strengthen document governance and enhance organizational competitiveness.

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1. Introduction

The rapid development of information technology in the last two decades has encouraged various sectors to digitize their operational activities. In today's digital era, the need for efficiency, speed of access, and data security is a top priority in the administration system. Manual document management is considered no longer relevant to the demands of modernization that prioritize mobility and accuracy of information. Digital systems allow for better data integration and reduce the risk of loss or damage to archives that are common in paper-based systems. Therefore, many agencies have begun to shift manual work processes to electronic systems based on information technology [1].

In Indonesia, digital transformation has become part of a national strategy that encourages various institutions, both government and private, to adapt to technology. One form of this transformation is the development of a web-based digital archive system, which allows users to store, access, and manage documents centrally [2]. *Web-based systems* are the choice because of their flexible nature, easy access from various devices, and cost-effective infrastructure. In the context of archiving, web-based systems provide added value in the form of fast document searches, systematic archival grouping, and data protection with user authorization. This step is considered a solution to improve work efficiency and support transparency and accountability [3].

But in reality, there are still many companies that survive with traditional filing methods. Manual systems that rely on physical files often cause various problems, such as difficulty in finding documents, limited storage space, and vulnerability to loss or damage to archives due to disasters or human negligence. In addition, manual archive management cannot answer *the need for real-time* access to information that is increasingly needed in decision-making. This condition certainly hampers the company's operational effectiveness, especially in administrative and coordination activities between divisions [4].

PT DUPOIN Palembang Branch is one of the agencies that still relies on the manual filing method in its work process. Document management is carried out through physical storage in an archival cabinet, with a simple recording system that is susceptible to human error [5]. As the volume of documents increases and the complexity of the company's operations increases, these manual systems begin to show significant weaknesses, especially in terms of archive search speed, document history tracking, and space efficiency. This has an impact on the slow administrative workflow and the high potential for errors in the filing process [6].

The need to improve the quality of archive management at PT DUPOIN is very important, especially in responding to the challenges of globalization and the industrial era 4.0 which demands efficiency, speed, and accuracy of information. Digitization of archives is not just the process of moving documents from physical to digital, but also includes designing a system that is able to manage documents with a clear and structured workflow [7]. With the implementation of a web-based digital archive system, the process of storing, searching, and reporting documents can be done faster and more securely. In addition, this system can support collaborative work between users and maintain data integrity by implementing appropriate access rights [8].

The implementation of a web-based digital archive system is expected to be able to bring positive changes to PT DUPOIN in terms of service and work efficiency. With this system, all documents can be accessed online, anytime and anywhere, without having to manually search for physical documents. This is especially helpful in remote work conditions or when there is an urgent need for certain documents. The web-based system also allows for the management of document metadata which makes it easy to group, search, and trace historical documents. Thus companies can strengthen document management as part of their competitive advantage[9].

The development of this system certainly needs to pay attention to the needs of users, organizational structure, and business processes that apply at PT DUPOIN Palembang Branch. Therefore, the design of the system must not only meet the functional aspect, but also the usability and ease of integration with other systems in the company. In addition, the aspect of data security is an important element in the development of a digital archive system, considering that the documents managed can be sensitive and strategic. The support from the management and the readiness of human resources are also determining factors for the success of the implementation of this system in the long term [10].

As an effort to digitally transform, the development of a web-based archiving system must be designed through a systematic and methodological approach. This approach includes needs analysis, *interface* design, *backend development,* and overall system testing and evaluation. Appropriate development methods, such as *waterfall* or *prototype*, need to be adapted to the complexity of the needs of the system and available resources [11]. With the right development foundation, this digital archive system is expected to be a long-term solution that is adaptive to technological developments and company needs [12].

2. Research Methods

a. Time and Place of Execution

Field work practice activities were carried out at PT DUPOIN Palembang Branch, precisely on Jl. POM IX Lorok Pakjo, Kec. The implementation lasted for two months, from February 5, 2025 to April 5, 2025. During this period, activities include observation, interviews, analysis of system needs, as well as the development and testing of web-based archive digitization systems.

b. Data Collection Methods

The data collection methods used during this work practice include:[13]

1. Observation

   Directly review the manual filing flow at PT DUPOIN to understand the challenges and needs of the

system.

2. Interview
   Conduct structured interviews with administrative and management staff to formulate the functional and non-functional needs of the digitization system.
3. Documentation Studies
   Collect physical document formats such as filing forms, archive lists, and document history as the basis for database design and system functions.

c. System Development Methods

The development of the archive digitization system uses the *Waterfall method*, which includes five stages:

1. Needs Analysis
   Conduct observations and interviews to formulate the necessary system specifications.
2. System Design
   Designing system structures—user interfaces (UIs), databases, and business processes using UML (*Use Case, Class*, *Activity*) diagrams created via *Draw.io.*
3. Implementation
   Build systems using PHP, MySQL, HTML, CSS, *JavaScript*, and *Bootstrap* technologies to make the interface responsive, modular, and *user-friendly*.
4. Testing
   Testing features using *the Black Box Testing method* to ensure the system functions according to specifications without looking at the internal code.
5. Maintenance
   Follow up on improvements after implementation, both from the aspect of *bug fixing* as well as feature customization according to user feedback

3. Results and Discussion

In the practical work report that has been analyzed, the author designs and implements a Web-based Archive Digitization system at PT DUPOIN Palembang Branch as an effort to Transform the Manual System to an Electronic System. The author developed a system using the waterfall method which emphasizes sequential and systematic phases. This application is designed to make it easier to manage incoming and outgoing archives. The results of the report show effectiveness and efficiency in assisting operations.

Planning (*Design*) To build a new application, an application design is needed. The following is a system design that is used to describe the entire system in general, namely using a Use Case Diagram, Class Diagram and Activity Diagram.[14]

3.1 Use Case Diagram

A use case is a modeling for the behavior *of* the information system to be created. *The use case* serves to describe the functions that the actor has in the application. Below is the *Use Case* Diagram of the application to be built.

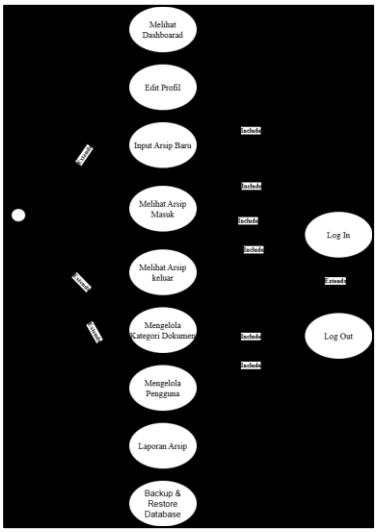

Figure 1. Use Case Diagram

3.2 Class Diagram

The class diagram describes the structure of the application in terms of defining the classes that will be created to build the application. Classes have what are called attributes and methods or operations. Below is the Class Diagram of the application to be built.

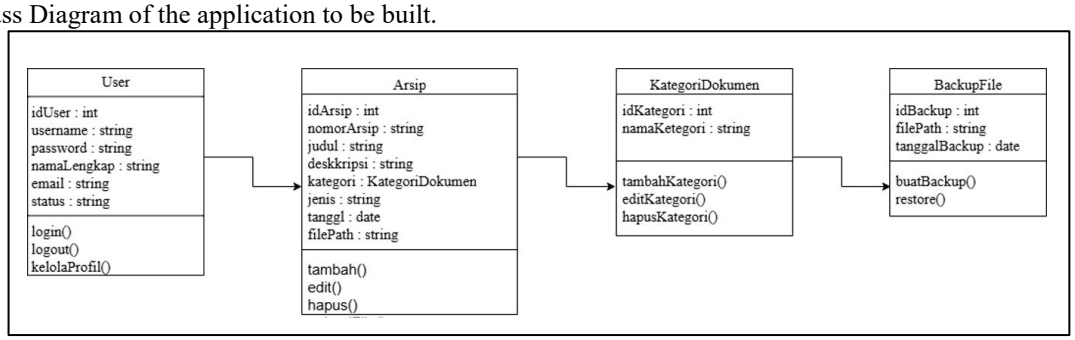

Figure 2. Class Diagram

3.3 Activity Diagram

Activity diagrams describe the activity of an application that exists on the software. Activity diagrams describe the activities performed by the application itself, without using actors. Below is the Activity Diagram of the application to be built.

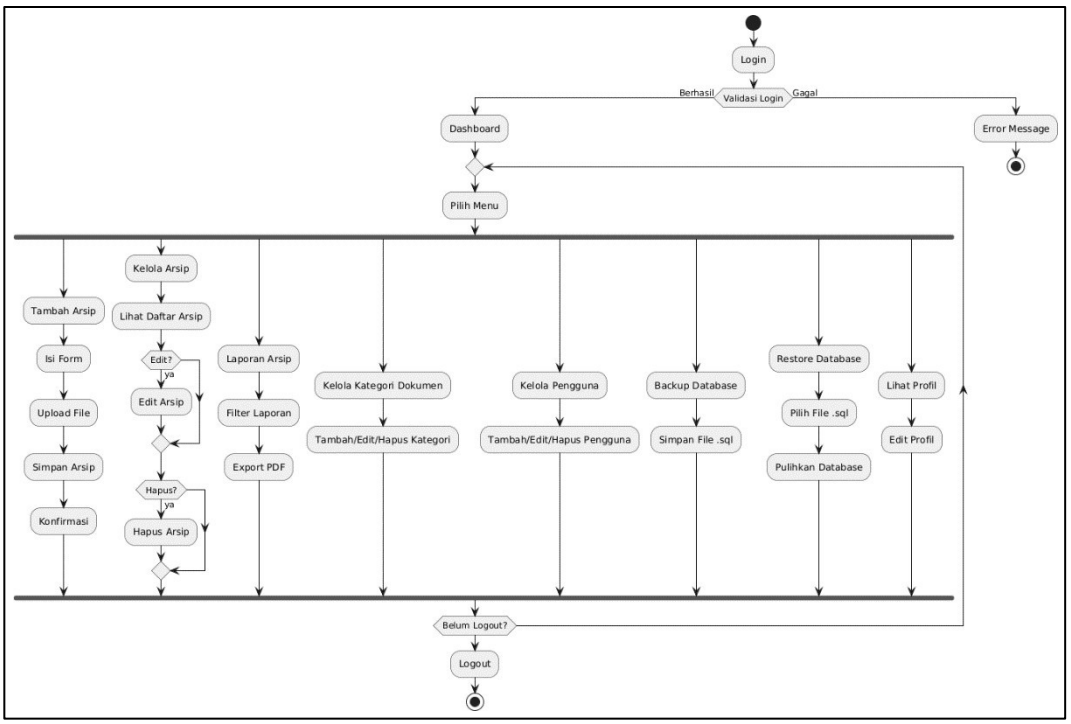

Figure 3. *Activity* Diagram

On this *website*, the operation and maintenance stages are not applied. Once the system is installed and started in use, no regular maintenance or updates are carried out to maintain its performance and functionality. All system features and components operate according to the original design without any bug fixes, performance improvements, or adjustments to changing user needs. This means that after the initial implementation, *the website* functions statically without ongoing support to ensure its long-term optimality and reliability. At the system design stage, it is the stage of explaining the program using diagrams such as *Use Case* Diagrams, *Class* Diagrams and *Activity* Diagrams.

3.4 System Implementation

The implementation stage is a crucial phase where all the pre-arranged planning and design is implemented into the real system. At this stage, the components of the system that have been built are

integrated and adjusted to function optimally according to the needs of the user. This process involves in-depth testing, user training, and final adjustments based on the feedback received. The implementation ensures that the system not only runs well technically but is also easy to use and provides maximum benefits to its users. In the admin *dashboard* view, *the Bootstrap framework* is used to create a responsive and modern interface. Using *Bootstrap* speeds up the development process thus ensuring consistency of display across devices.

3.4.1 Login Page View

The following is a view of *Login* from Web-Based Archive Digitization at PT DUPOIN Palembang Branch as an Effort to Transform Manual System to Electronic System.

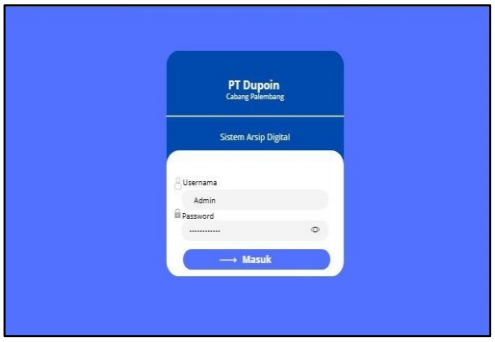

Figure 4. Login Page View

3.4.2 Dashboarad Page View

The Dashboard page is the initial view of the page when accessing the application by providing data information

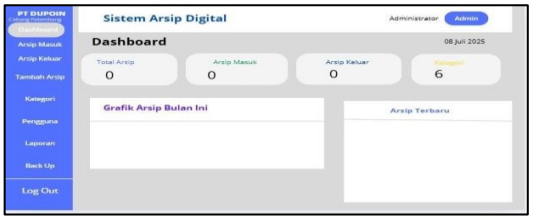

Figure 5. Dashboard Page View

3.4.3 Profile Page View

The following is a view of the profile page of Web-Based Archive Digitization at PT DUPOIN Palembang Branch as an Effort to Transform the Manual System to an Electronic System.

Figure 6. Profile Page View

3.4.4 Login Archive Page View

The following is a view of the incoming archive page of Web-Based Archive Digitization at PT DUPOIN Palembang Branch as an Effort to Transform the Manual System to an Electronic System.

Figure 7. Login Archive Page View

3.4.5 Exit Archive Page View

The following is a view of the archive page coming out of Web-Based Archive Digitization at PT DUPOIN Palembang Branch as an Effort to Transform the Manual System to the Electronic System.

Figure 8. Exit Archive Page View

3.4.6 Add New Archive Page View

The following is a view of the new archive add page from Web-Based Archive Digitization at PT DUPOIN Palembang Branch as an Effort to Transform the Manual System to an Electronic System.

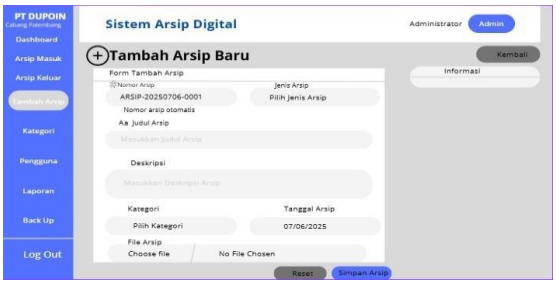

Figure 9. Add New Archive Page View

3.4.7 Category Page Views

The following is a view of the category page of Web-Based Archive Digitization at PT DUPOIN Palembang Branch as an Effort to Transform Manual Systems to Electronic Systems.

Figure 10. Category Page Views

3.4.8 User Page View

The following is a user page view of Web-Based Archive Digitization at PT DUPOIN Palembang Branch as an Effort to Transform the Manual System to an Electronic System.

Figure 11. User Page View

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3.4.9 Archive Report Page View

The following is a view of the archive report page from Web-Based Archive Digitization at PT DUPOIN Palembang Branch as an Effort to Transform the Manual System to an Electronic System.

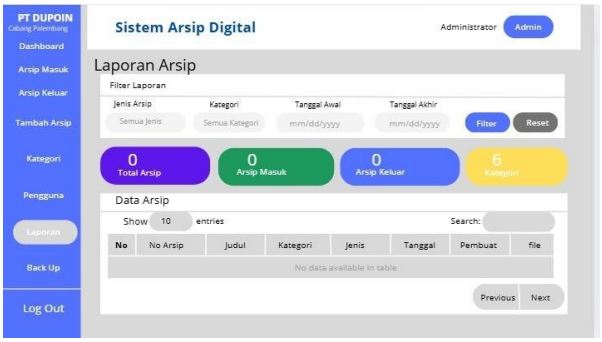

Figure 12 Archive Report Page View

3.4.10 Backup Page View

The following is a view of the backup page of Web-Based Archive Digitization at PT DUPOIN Palembang Branch as an Effort to Transform the Manual System to the Electronic System.

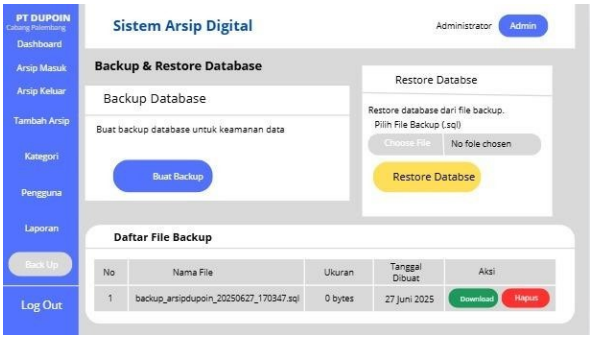

Figure 13 Backup Page View

3.4.5 Testing

Testing using *this Black-box* is done entirely by assessing only the needs and specifications *of the software*. The *Black-box* system test is only enough to review the inputs and outputs on the software system without knowledge of the internal program below, the black-box *system test* includes the admin system test at PT DUPOIN Palembang Branch. The results of the system test can be seen in the following table:

Table 1. Admin Test Table

Level user	Test Class	Test Items	Kind Testing	Result
Admin	*Login*	Insert *username/email* and password.	System	Succeed
	Dashboard Page	Displaying the Dashboard	System	Succeed
	Profile	Change the Registered Name	System	Succeed
	Login Archive	Create, Update, Delete	System	Succeed

Exit Archive	Create, Update, Delete	System	Succeed
Add Archive	Create, Update, Delete	System	Succeed
Category	*Create, Update, Delete*	System	Succeed
User	Admins can monitor user inputs and expenses.	System	Succeed
Report	Admins can upload incoming and outgoing archive reports	System	Succeed
Back Up	Admins can delete and re-download archives	System	Succeed

4. Conclusion

From the results of the research conducted by the author, it can be concluded that it is related to Web-Based Archive Digitization at PT DUPOIN Palembang Branch as an Effort to Transform Manual Systems to Electronic Systems as follows:

1. This system assists admins or officers in managing archive data digitally, thereby increasing efficiency, making it easier to search for data, minimizing archiving errors, and supporting data *backup* and *restore* to maintain information security.
2. The design diagrams that have been created (*use case diagrams, activity diagrams,* and *class diagrams*) show clear relationships between actors and use cases, structured system process flows, and class designs that reflect *entities* and methods that suit the needs of the system.
3. The results of the test using *the Black Box Testing* method show that all system features are running as expected. The login, registration, data management, and prediction functions can be executed correctly and produce the corresponding output, indicating that the application is ready for use by the user.

Confession

Based on the results of the research, design, testing, and implementation of the system that has been carried out, as well as considering findings during the development process, there are several things that need to be considered to ensure that the system can continue to develop optimally and provide maximum benefits for the company. Therefore, some suggestions that can be submitted for further development and future implementation of the system are as follows.

1. It is necessary to add an automatic report feature in PDF or Excel format so that the prediction results and load data history can be saved and distributed to the management or related units at regular intervals.
2. It is recommended to implement an *early warning system* if the prediction results show potential overload, so that operators can take action faster and more precisely.
3. Further testing should be carried out in a variety of real-world scenarios, including high-load tests and extreme cases, so that the system can be evaluated more thoroughly in terms of performance and durability.
4. To improve scalability, it is recommended that the application be hosted on *a server* that supports large data storage and *machine learning model* computing, as well as integrate with *real-time monitoring dashboards* where possible.

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