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# Formulating A Needs-Based Digital Transformation Model To Enhance The Efficiency Of Administrative Services At Universitas Negeri Surabaya

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**Abstract**

*Digital transformation is one of the strategic approaches that can improve the effectiveness and efficiency of administrative services in higher education institutions. Universitas Negeri Surabaya (UNESA), as a State University with Legal Entity Status (PTNBH), has implemented various information systems to support administrative services. However, several challenges remain, including unintegrated archive management, administrative processes that are still partially conducted manually, and the absence of a digital transformation model developed based on a comprehensive needs analysis. This study aims to analyze user requirements and formulate a digital transformation model that supports the efficiency of administrative services through the development of a Digital Archive Management System. The research employed a descriptive qualitative approach using the Research and Development (R&D) method. Data were collected through observation, interviews, questionnaires, documentation studies, and literature reviews involving archivists, archive managers, correspondence operators, and administrative service users at Universitas Negeri Surabaya. The needs analysis identified two main actors, twenty-two functional requirements, and three non-functional requirements that formed the basis for system design. The digital transformation model was implemented as a web-based Digital Archive Management System using the Waterfall development method and UML modeling, and it was tested using Black Box Testing. The testing results demonstrated that all system functions operated in accordance with the designed specifications. The developed system supports centralized archive management, improves administrative process efficiency,*



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*accelerates document retrieval, facilitates archive verification, and supports the implementation of Electronic-Based Government Systems (SPBE) at Universitas Negeri Surabaya.*

**Keywords : Digital Transformation; Needs Analysis; Administrative Services; Digital Archive Management System; SPBE.**

## INTRODUCTION

The development of information and communication technology has become one of the most significant phenomena in human civilization. Technological advancement has transformed various aspects of social life, including the ways people interact, communicate, work, and obtain services. The rapid growth of the internet, digital media, cloud computing, and artificial intelligence has accelerated digital transformation across various sectors. Digitalization refers to the process of converting information or data from physical form into digital formats that can be processed using information technology. Digital transformation is essential for organizational development in the digital era, where institutions and society increasingly depend on data and technology to enhance operational efficiency and create added value for users [1].

Digital transformation should not be interpreted merely as the utilization of information technology; it also involves changes in business processes, organizational governance, work culture, and service models to improve effectiveness, efficiency, and service quality. Public service institutions have increasingly adopted digital services due to growing public expectations for faster, more transparent, and more accountable services.

According to Law Number 25 of 2009 concerning Public Services, Article 1 paragraph (1), public service is defined as a series of activities carried out to fulfill service needs in accordance with laws and regulations for every citizen and resident regarding goods, services, and/or administrative services provided by public service providers [2].

Higher education institutions, as public service providers, are also required to implement digital transformation to support organizational governance. The digitalization of administrative services can improve work efficiency, accelerate service delivery, increase information accessibility, and strengthen administrative governance when supported by needs-based organizational planning [3]. Universitas Negeri Surabaya, as a State University with Legal Entity Status (PTNBH), has begun implementing digital administrative services. Nevertheless, the implementation still faces several challenges,



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such as suboptimal system integration, the absence of standardized digital archive management, and the need to align user requirements with information system development. These conditions indicate that digital transformation requires not only technological implementation but also a model designed based on organizational needs analysis [4].

Mation model to support the efficiency of administrative services at Universitas Negeri Sur ya through the development of an integrated Digital Archive Management System.aba

## RESEARCH METHODOLOGY

### Research Approach

This study employed a descriptive qualitative approach using the Research and Development (R&D) method. The qualitative approach was used to analyze user requirements and existing administrative service conditions, while the R&D method was applied to formulate a digital transformation model that supports administrative service efficiency.

### Data Collection Techniques

The data collection techniques were designed to obtain a comprehensive understanding of administrative service processes at Universitas Negeri Surabaya. The study applied four main methods:in-depth interviews, direct observation, document analysis, and literature review.

### Data Analysis Technique

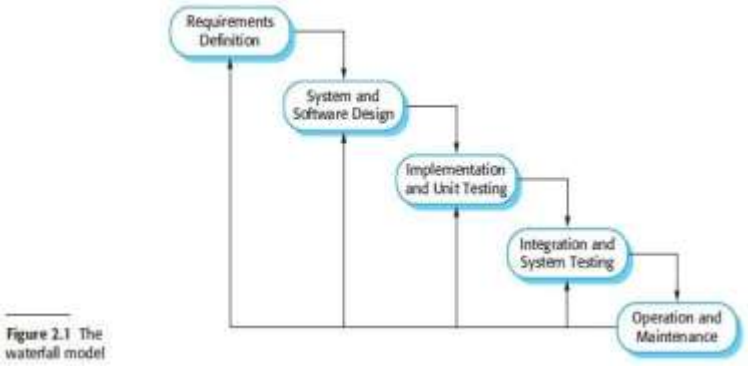
Descriptive analysis was used to examine the existing administrative service conditions, identify current problems, and determine system requirements as the basis for formulating the digital transformation model.

### System Development

The Waterfall method was employed to develop the Digital Archive Management System that supports administrative service efficiency at Universitas Negeri Surabaya. The Waterfall model is a linear software development approach in which each stage must be completed before proceeding to the next stage.


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**Picture 2.1 Waterfall Method**

**Research Roadmap**

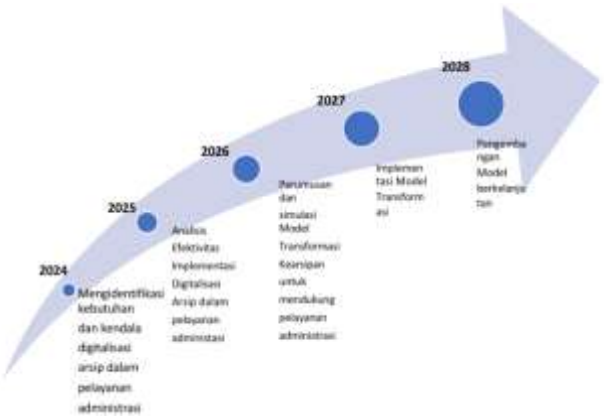



**Figure 2.2 Research Roadmap**

## RESULTS AND DISCUSSION

### Administrative Service Conditions at Universitas Negeri Surabaya

Administrative services at UNESA have utilized various applications to support academic, personnel, financial, and general administrative processes. However, archive management still faces several problems, including scattered archives across multiple media and work units, manual archive management processes, inconsistent archive classification standards, lack of integration with other information systems, and inadequate archive security and access control mechanisms.



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**Table 3.1 Issues in Administrative Services and Their Implications**

| No. | Issues | Implications |
|---|---|---|
| 1 | Archives are distributed across multiple media and organizational units. | Document retrieval becomes time consuming and increases the potential for duplicate archives. |
| 2 | Archive management processes are still conducted manually. | Administrative services become less efficient and require a longer processing time. |
| 3 | Standardized archive management procedures have not yet been established. | This leads to inconsistencies in document classification and storage practices. |
| 4 | The archive management system has not been integrated with other institutional information systems. | This results in repetitive data entry and limits the effectiveness of information exchange between systems. |
| 5 | Archive security and access control mechanisms are not yet adequately implemented. | This increases the risk of document loss, damage, and unauthorized access to archival records. |

**Digital Solution for User Requirements**

The analysis results indicated that archive management processes still experience several obstacles, such as dispersed archive storage, inefficient document retrieval, manual document distribution, and the lack of integration with existing university information systems. Therefore, the proposed digital solution is the development of a **Digital Archive Management System** designed as a centralized digital repository that enables each work unit to store and manage documents in a standardized manner.

**Formulation of the Digital Transformation Model**

Based on the needs analysis obtained through interviews and observations, a digital transformation model was formulated as a reference for developing the Digital Archive Management System at Universitas Negeri Surabaya.


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**Requirements Engineering**

**Requirements Elicitation**

Information was collected through observation and interviews. Observations were conducted by directly examining administrative and archive management processes at Universitas Negeri Surabaya. Interview data were supported by questionnaire results from previous studies. The elicitation process provided information regarding existing processes, problems encountered, and proposed solutions.

**Requirements Analysis**

Requirements analysis is a fundamental stage in system development aimed at identifying user requirements, organizational requirements, functional requirements, and non-functional requirements so that the developed solution aligns with organizational objectives and stakeholder needs [5]. The analysis identified:

**Table 3.2 Requirements Analysis**

| No. | Requirement Category | Quantity |
|---|---|---|
| **1** | Actors | 2 |
| **2** | Functional Requirements | 22 |
| **3** | Non-Functional Requirements | 3 |

**Use Case Diagram**

A Use Case Diagram was used to model the system's functional requirements based on the interaction between actors and the system [6]. The identified requirements were represented in the use case model to provide a clear overview of system functionality.



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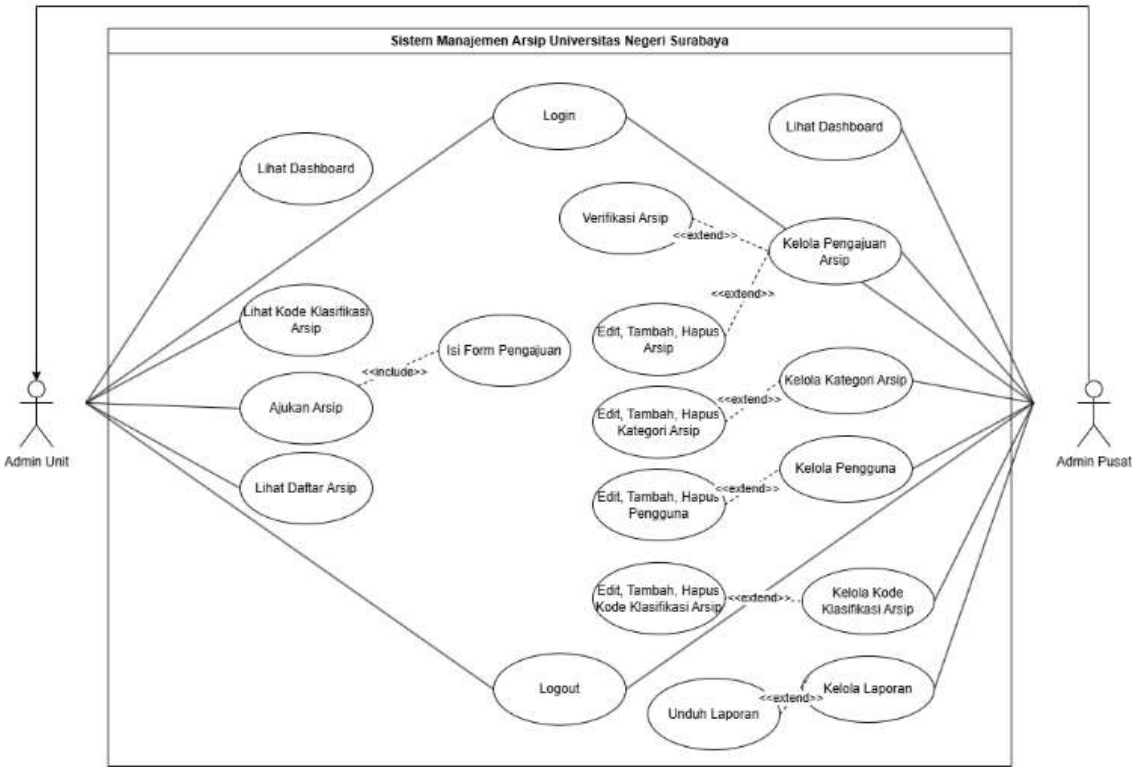



**Figure 2.3 Use Case Diagram**

**System Implementation**

The results of the system implementation are presented through a web-based interface designed with a simple and user friendly appearance, enabling both unit administrators and central administrators to operate the system efficiently. The interface consists of several main pages. For the central administrator role, the system provides a login page, central administrator dashboard, archive data page, archive submission data page, user management page, classification code list, and archive type management page. For the unit administrator role, the system provides a unit administrator dashboard, archive submission page, and unit archive list page. Each interface component is integrated to support the smooth execution of administrative archive management services at Universitas Negeri Surabaya.


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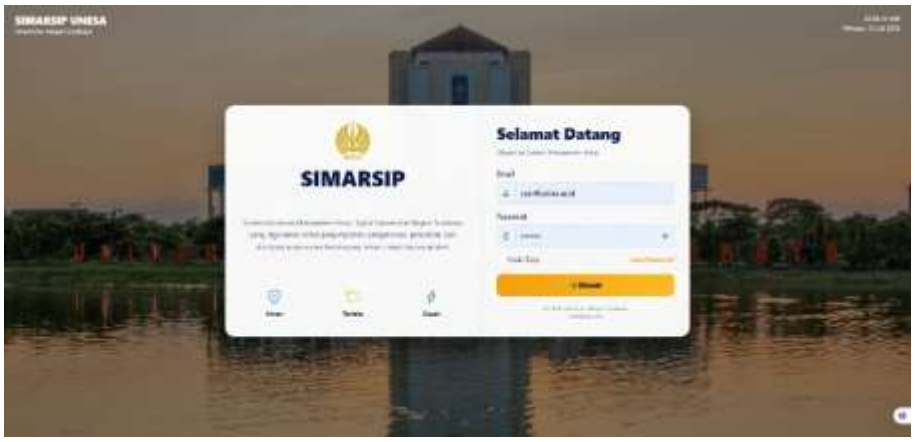



**Figure 2.5 Login Page**

The login page serves as the initial interface used by users to access the system. The system supports two user roles: unit administrator and central administrator. In the archive submission process, the unit administrator logs into the unit administrator dashboard and selects the Add Archive menu. The system then displays a list of archive categories. After selecting a category, the unit administrator is presented with a form for entering archive information to be submitted.

Once the archive is submitted, the archive record is forwarded to the central administrator dashboard with a Pending status. The central administrator selects the Archive Verification menu, chooses the archive to be reviewed, and clicks the Detail button to display the complete archive information.

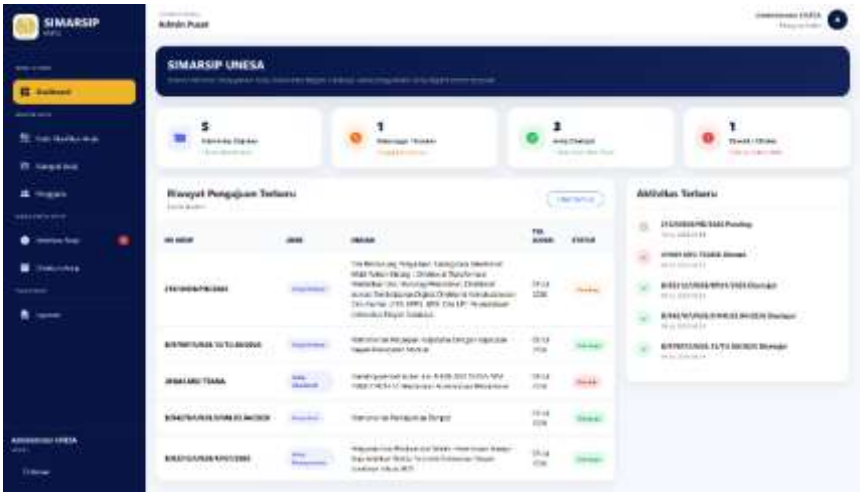



**Figure 2.7 Central Administrator Dashboard**


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The archive detail page contains all information submitted by the unit administrator. The central administrator may approve, revise, or reject the submitted archive in accordance with applicable regulations. After the verification process is completed, the verification result is automatically displayed on the unit administrator dashboard. Approved archives are transferred to the Archive Directory menu. If revisions are required, the unit administrator can modify the archive data according to the notes provided by the central administrator.



**Figure 2.9 Unit Administrator Archive Detail Page**

In addition, the verification status is displayed on the unit administrator dashboard. The unit administrator can manage submitted archives according to their current status. For example, when a revision is requested, the administrator may edit the submission and resubmit it for verification. Archive deletion can only be performed by the unit administrator when the archive status is Pending (not yet verified) or Rejected.

**System Testing**

System testing was conducted using the Black Box Testing method. Black Box Testing is a software testing technique that focuses on evaluating system functionality based on inputs and outputs without considering the internal program structure or source code [8]. The testing process covered the login, archive management, document upload, archive search, archive verification, reporting, and logout features, as presented in Table 3.3.


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**Table 3.3 Black Box Testing Results**

| No. | Feature | Expected Result | Status |
|---|---|---|---|
| **1** | Login | The system successfully validates user accounts. | Valid |
| **2** | Archive Management | Archive data can be added, modified, and deleted. | Valid |
| **3** | Document Upload | Documents are successfully uploaded and stored in the system. | Valid |
| **4** | Archive Search | Archives can be retrieved according to the specified keywords. | Valid |
| **5** | Archive Verification | Archive status changes according to the verification process. | Valid |
| **6** | Archive Reporting | Reports are displayed according to the selected data criteria. | Valid |
| **7** | Logout | The system successfully terminates the user session. | Valid |

## CONCLUSION

This study successfully formulated a needs-based digital transformation model to support the efficiency of administrative services at Universitas Negeri Surabaya. The analysis results indicate that administrative services still encounter several challenges, including unintegrated archive management, manual administrative processes, and suboptimal digital archive management practices.

The requirements analysis identified two actors, twenty-two functional requirements, and three non-functional requirements, which served as the foundation for the development of a web-based Digital Archive Management System. The system was developed using the Waterfall development method and evaluated through Black Box Testing, with the results demonstrating that all system functions operated in accordance with the specified requirements.

Therefore, the developed system is considered feasible and effective for supporting digital archive management, improving the efficiency of administrative service processes, and facilitating the implementation of the Electronic-Based Government System (SPBE) at Universitas Negeri Surabaya.



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## SUGGESTIONS

The development of the Digital Archive Management System can be further improved in several aspects. Future enhancements should focus on the integration of the system with the university e-Office platform, enabling archives generated through e-Office to be automatically submitted to the archive management system. In addition, the system may be expanded by introducing additional user roles, such as university leaders, administrative staff, and lecturers, who require archive search facilities to borrow or access the necessary archival documents in accordance with institutional needs.

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## DECLARATION OF INTEREST

The authors declare that they have no financial or non-financial conflicts of interest related to this study. This includes, but is not limited to, honoraria, educational grants, participation in speaker bureaus, equity interests, expert testimony, patent licensing arrangements, personal or professional relationships, organizational affiliations, or any other interests that could have influenced the subject matter, research process, or interpretation of the findings presented in this manuscript.

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