

Digital Transformation of Archival Management in Local Government: Design and Development of an Integrated Information System

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ABSTRACT

Purpose of the study: This study aims to design and develop an integrated archival information system to support the digital transformation of archival management in local government institutions. The system is intended to improve the efficiency, accessibility, and accuracy of managing administrative records and archival information within the Patampanua District Office.

Methodology: This study employed a qualitative research approach. Data were collected through observation, interviews, and literature review. The system was developed using the Waterfall software development model, including requirement analysis, system design, implementation, integration and testing, and maintenance stages. Black Box Testing was applied to evaluate system functionality. The system was implemented as a desktop-based archival information system.

Main Findings: Results indicate that the developed archival information system successfully integrated employee records, population records, incoming mail, outgoing mail, land archives, and reporting functions into a single platform. System testing demonstrated that all modules operated according to functional requirements. The system improved document accessibility, reduced retrieval time, enhanced data organization, and supported more efficient administrative processes within the Patampanua District Office.

Novelty/Originality of this study: The novelty of this study lies in the development of an integrated archival information system that combines multiple categories of administrative records, including employee, population, correspondence, and land archives, within a single platform. Unlike previous studies focusing on specific archival functions, this research provides a comprehensive digital archiving solution that supports administrative efficiency and digital transformation in local government institutions.

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1. INTRODUCTION

The rapid development of information technology has significantly transformed administrative processes in both public and private organizations [1], [2]. Information systems have become essential tools for managing organizational data efficiently, accurately, and systematically [3]. One of the critical aspects of administrative management is archival management, which serves as a source of information, organizational memory, and evidence of institutional activities. Effective archival management supports decision-making processes and ensures the availability of accurate information when needed. Therefore, digital transformation in

archival management has become an important strategy for improving organizational performance and public service quality. Despite the increasing adoption of information technology, many local government institutions still rely on conventional archival management practices [4], [5]. In the Patampanua District Office, archival activities such as document recording, storage, and retrieval are primarily conducted using paper-based systems. This condition often results in difficulties in locating documents, prolonged retrieval times, and a higher risk of document loss or misplacement. The accumulation of physical archives over time further complicates administrative processes and reduces operational efficiency [6], [7]. Consequently, the effectiveness of archival services and administrative performance may be negatively affected by the limitations of manual record management.

Several previous studies have investigated the development and implementation of archival information systems in different organizational settings. Research conducted by Masrur focused on a desktop-based system for managing incoming and outgoing correspondence to improve administrative efficiency. Handayani examined archival administration practices and identified factors affecting archival management performance in government institutions. Meanwhile, Tampubolon analyzed archival storage procedures to improve document organization and accessibility [8]. These studies demonstrate the importance of archival management systems in supporting organizational activities and enhancing administrative effectiveness. Although previous studies have contributed valuable insights into archival management, several limitations remain [9]. Most studies focused only on specific archival components, such as incoming and outgoing correspondence, without integrating multiple categories of administrative records. In addition, some studies emphasized archival procedures and administrative practices rather than developing a comprehensive information system. Limited attention has also been given to the integration of employee, population, land, and correspondence archives within a single platform. As a result, there is still a need for a more integrated archival management solution capable of addressing the diverse information requirements of local government institutions [10], [11].

The implementation of an integrated digital archival system is important for improving efficiency, effectiveness, and accountability in public administration. Digital archiving can reduce document retrieval time, minimize the risk of data loss, and improve the accuracy of information management. Furthermore, integrated information systems support better coordination among administrative units and facilitate faster decision-making processes [12]. Efficient archival management also contributes to the delivery of responsive and high-quality public services [13], [14]. Therefore, developing a digital archival management system is highly relevant to the current needs of local government organizations undergoing digital transformation.

This study offers a novel contribution by developing an integrated archival information system that manages multiple categories of records, including correspondence, employee data, population records, and land administration documents within a single platform. Unlike previous studies that focused on limited archival functions, this research adopts a comprehensive approach to digital archival management in a local government environment. The system is developed using the Waterfall software development model to ensure a structured and systematic development process [15], [16]. In addition, the proposed system is designed to improve document accessibility, administrative efficiency, and information accuracy. Therefore, this study contributes both practically and academically to the advancement of digital archival management in local government institutions.

2. RESEARCH METHOD

2.1 Research Design

This study employed a qualitative research approach to investigate archival management practices in the Patampanua District Office and identify challenges associated with conventional record management. The research focused on analyzing existing archival procedures, including document creation, storage, retrieval, and reporting processes. Data were collected to understand user requirements and operational constraints affecting archival services [17], [18]. The findings from the preliminary analysis were used as the basis for designing an integrated archival information system. This approach enabled the development of a solution that aligns with organizational needs and supports digital transformation in local government administration.

2.2 Data Collection Techniques

Data collection was conducted using observation, interviews, and literature review techniques. Observation was performed to examine the existing archival workflow and identify operational issues related to manual document management. Interviews were conducted with administrative staff to gather information regarding system requirements and user expectations [19], [20]. In addition, relevant books, journal articles, and previous studies were reviewed to establish the theoretical foundation of the research. The combination of these techniques provided comprehensive information for system analysis and development.

Table 1. Data Collection Techniques

Technique	Purpose
Observation	Identify existing archival management processes
Interview	Gather user requirements and operational needs
Literature Review	Support theoretical and technical development

2.3 System Development Method

The system was developed using the Waterfall model, which provides a structured and sequential approach to software development. The process began with requirement analysis to identify functional and non-functional system requirements based on organizational needs. The next stage involved system design, followed by implementation and coding of the archival management modules. After development, integration and testing were conducted using the Black Box Testing method to verify system functionality and ensure that all features operated according to specifications [21]. Finally, the system entered the operation and maintenance stage to support continuous usage and future improvements.

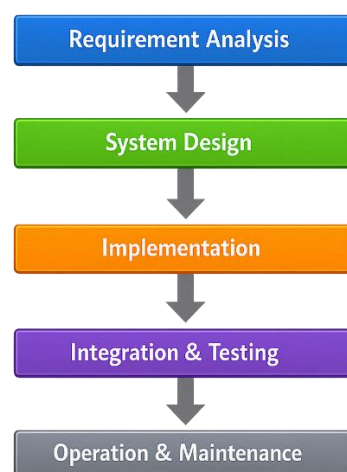


Figure 1. Waterfall Development Model

3. RESULTS AND DISCUSSION

3.1 Existing Archival Management Analysis

The analysis of the existing archival management process revealed that the Patampanua District Office relied heavily on manual record-keeping procedures. Administrative records, including incoming correspondence, outgoing correspondence, employee data, population records, and land documents, were documented and stored in physical archives [22]. This conventional approach created challenges in retrieving documents, particularly when archives had accumulated over an extended period. In addition, report preparation required considerable time because data had to be searched and compiled manually. These conditions reduced operational efficiency and highlighted the need for a computerized archival management system.

Table 2. Analysis of the Existing Archival Management System

Aspect	Existing Condition
Document Storage	Paper-based archives
Data Retrieval	Manual search process
Report Generation	Performed manually
Data Security	Vulnerable to loss and damage
Operational Efficiency	Relatively low

3.2 System Requirements Analysis

The requirement analysis identified several functional requirements necessary for the development of the proposed archival information system. The system was designed to manage multiple categories of

administrative records, including employee records, population data, incoming correspondence, outgoing correspondence, land archives, and electronic identity card services. In addition, the system provides search and reporting functionalities to facilitate document retrieval and information management. User access was intended for administrative staff responsible for archival activities within the district office. These requirements served as the foundation for designing an integrated archival management platform.

Table 3. Functional Requirements of the Proposed System

Module	Function
Employee Records	Manage employee information
Population Records	Manage population data
Incoming Mail	Record incoming correspondence
Outgoing Mail	Record outgoing correspondence
Land Archives	Manage land-related documents
Reporting Module	Generate archival reports

3.3 System Design and Development

Based on the identified requirements, an integrated archival information system was developed using the Waterfall model. The system architecture was designed to support the management of various archival categories within a centralized database environment. Data Flow Diagrams and Entity Relationship Diagrams were utilized to model data movement and relationships among system entities. The developed system enables users to perform data entry, data retrieval, document management, and report generation through an integrated interface. This design supports more efficient archival processes compared to the previous manual approach.

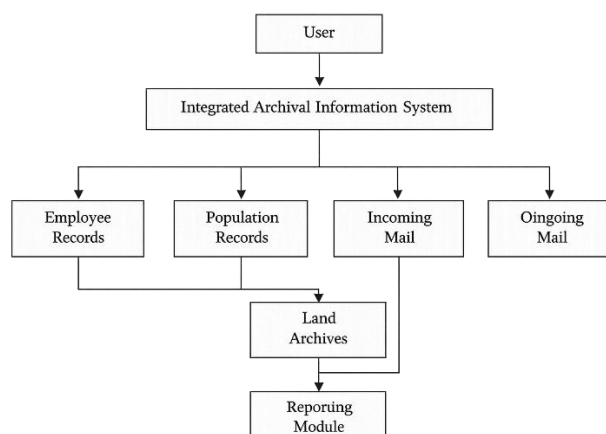


Figure 2. Overview of the Proposed System Architecture

3.4 System Testing Results

System testing was conducted using the Black Box Testing method to evaluate the functionality of each module. The testing process focused on user interactions and system outputs without examining the internal program structure. Several system functions were tested, including login access, employee management, population records, electronic identity card processing, incoming correspondence, outgoing correspondence, land archives, and reporting features. The results demonstrated that all modules functioned according to their intended specifications and successfully processed user requests. Therefore, the developed system was considered capable of supporting archival management activities within the Patampanua District Office.

Table 4. Summary of Black Box Testing Results

Function Tested	Status
Login Module	Passed
Employee Records	Passed
Population Records	Passed
E-KTP Processing	Passed
Incoming Mail	Passed

Function Tested	Status
Outgoing Mail	Passed
Land Archives	Passed
Reporting Module	Passed

Archival management practices at the Patampanua District Office were previously dominated by manual procedures that affected the efficiency of administrative activities. Physical records were stored conventionally, causing difficulties in document retrieval and increasing the possibility of archive misplacement. Long retrieval times also reduced the effectiveness of administrative services provided by the institution [23]. Implementation of the integrated archival information system addressed these issues by centralizing record management processes within a single platform [24], [25]. Improved accessibility and organization of archival data ultimately supported more efficient administrative operations.

Results obtained from system testing demonstrated that the developed application successfully integrated multiple categories of administrative records into one platform. Employee records, population data, incoming mail, outgoing mail, land archives, and reporting functions could be managed through a unified system environment. Functional testing using the Black Box method confirmed that all modules operated according to their intended specifications. Availability of search and reporting features significantly facilitated information retrieval and data processing activities [26]. Enhanced system functionality contributed to greater efficiency and accuracy in archival management processes.

Findings of this study are consistent with previous research emphasizing the role of information systems in improving archival administration. Earlier studies reported that digital technologies could reduce manual workloads while increasing the accessibility of organizational records. Similar outcomes were observed in the present study, where digitalization simplified archival processes and accelerated document retrieval. Evidence from prior research also highlights the importance of integrated information management in supporting organizational performance [27], [28]. Support from these studies strengthens the argument that digital transformation can improve archival management effectiveness in government institutions.

Novelty of this research lies in the development of an integrated archival information system capable of managing diverse categories of administrative records within a single platform. Previous studies generally focused on specific archival functions, particularly incoming and outgoing correspondence management. Broader integration implemented in this study includes employee records, population records, land archives, and reporting features simultaneously. Application of the Waterfall development model further ensured a systematic and structured software development process [29], [30]. Comprehensive integration of archival functions distinguishes this study from many earlier archival management solutions.

Practical implications of this research can be observed in the improvement of administrative efficiency and service quality within local government institutions. Faster access to archival information enables employees to perform administrative tasks more effectively and accurately. Availability of integrated data management also supports better accountability and transparency in organizational operations. Adoption of digital archival systems may encourage government offices to modernize traditional record management practices. Benefits generated by the system demonstrate the strategic value of digital transformation initiatives in public sector administration.

Several limitations should be considered when interpreting the findings of this study. Implementation and evaluation were conducted only within the Patampanua District Office, which may limit the applicability of the results to different organizational environments. System development was restricted to a desktop-based platform, reducing accessibility compared with web-based or cloud-based solutions. Evaluation activities primarily focused on functional performance through Black Box Testing without examining long-term user satisfaction or organizational impacts. Future research should expand implementation settings and employ broader evaluation approaches to obtain a more comprehensive understanding of digital archival management effectiveness.

4. CONCLUSION

This study successfully developed an integrated archival information system to support the digital transformation of archival management in the Patampanua District Office, addressing the limitations of conventional record management practices identified in the introduction. Implementation of the system demonstrated its capability to manage employee records, population data, incoming and outgoing correspondence, land archives, and reporting functions within a unified platform. Results obtained from system testing confirmed that all functional modules operated effectively and contributed to improved efficiency, accessibility, and accuracy in archival management processes. These findings indicate that the adoption of digital technologies can strengthen administrative governance and enhance the quality of public services in local government institutions. Practical contributions of this research include providing a structured model for the

implementation of integrated archival systems in government environments undergoing digital transformation. Future studies are recommended to extend the system into web-based or cloud-based platforms, evaluate user satisfaction and organizational performance impacts, and investigate its applicability across different governmental and public sector institutions.

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