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Archival Storage Model in the Business Administration Department of Politeknik Negeri Medan

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ABSTRACT

Background: This study develops an electronic archival storage model for the Business Administration Department of Politeknik Negeri Medan to overcome issues of unsystematic filing, slow retrieval, limited digital adoption, and the absence of standardized procedures.
Method: Using a ten-stage Research and Development (R&D) design, data were collected through observations and structured interviews with departmental leaders, staff, lecturers, and students. Thematic qualitative analysis guided the design of a four-cabinet archival system integrated with cloud-based digital processes.
Results: The study identifies four key issues: the diversity of physical and electronic archives, inconsistent classification and indexing, limited digital infrastructure and training, and both advantages and challenges of digital management. Although digitalization improves retrieval efficiency, physical archives remain dominant and gaps persist in cybersecurity, metadata standards, and organizational readiness. The proposed model enables document retrieval in less than one minute and supports more systematic and secure archival practices.
Conclusion: This research offers a holistic, context-specific archival model that integrates digital transformation, cloud storage, and data governance extending beyond conventional filing systems and providing a scalable framework for broader institutional use.

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INTRODUCTION

Information and data are essential in the activities of companies, organizations, and government institutions. Information and data related to organizational activities are stored as evidence of actions that have been carried out (Eroğlu & Çakmak, 2020). This is referred to as archiving. Archives play an important role in providing complete information and data to support the smooth operation of an institution (Mandulangi et al., 2024). Archives constitute a vital source of information that serves as authentic evidence in the administrative processes of an organization (Jamiliyati, 2025). In the context of educational institutions particularly the Business Administration Department at Politeknik Negeri

Medan archives hold a strategic role in supporting academic, financial, human resource, and administrative services for students and lecturers. Proper archival management reflects the institution's efficiency, accountability, and professionalism (Bernadetha et al., 2025).

Stored archives assist in daily operational activities and facilitate the provision of quality services (Faizah et al., 2025). This supports service that is fast, accurate, and reliable. To achieve effective archival storage, an appropriate filing system must be implemented by every institution (Ergüzen & Ünver, 2018). Each organization or unit within an organization may select the filing system that best meets its needs (Hoyle, 2017). Commonly applied archival systems include alphabetical, chronological, geographical, subject-based, and numerical systems (Liman, 2024). The Business Administration Department of Politeknik Negeri Medan is one of the academic departments within the institution. In its daily operations, the department conducts numerous activities related to the teaching and learning process involving students, lecturers, administrative staff, and operating under the guidance and responsibility of the department head, secretary, and the coordinators of the Business Administration, Business Management, and MICE study programs. One of the essential activities is the management of archives. Archives must be stored properly, be easy to retrieve when needed, and must not be misplaced or lost (Moss & Gollins, 2017). However, based on preliminary observations, the archival management and storage practices in the Business Administration Department still face several challenges. Important documents such as correspondence, academic records, and activity reports are not yet stored systematically. Most of the archives remain in physical form without clear classification or indexing systems, making retrieval difficult when needed. Furthermore, limited storage space, minimal use of information technology, and the absence of standard operating procedures (SOPs) for archival storage hinder the effectiveness of archival management.

Based on interviews with the Head of the Business Administration Department, the following information was obtained: (1) Archives are not neatly organized; (2) Retrieving archives takes considerable time; (3) Filing codes are not yet used in storing letters. Based on interviews with students of the Business Administration Department, the following information was obtained: (1) Attendance sheets are not always available on time; (2) Not all course syllabi (RPS) are available for all classes in the attendance folders. Based on the conducted observations, retrieving requested documents often takes a long time. Archives cannot be immediately located when needed. The archival storage system in the Business Administration Department is still suboptimal. Archival storage procedures are not consistently implemented. When archives are not stored properly and systematically, administrative processes are disrupted due to the time required to find documents (Bernadetha et al., 2025). This can also affect departmental operations and impact decision-making processes, as crucial documents cannot be retrieved promptly (Abusweilem & Abualous, 2019).

In today's digital era, the need for a modern, efficient, and integrated archival storage system has become increasingly urgent (Szekely, 2017). The digitization of archives and the adoption of technology-based storage models not only simplify data retrieval and security but also support the principles of a "paperless office" and improve work efficiency (Retnosari et al., 2024). Therefore, it is necessary to develop an archival storage model that aligns with the needs and characteristics of the Business Administration Department at Politeknik Negeri Medan, considering technical aspects, human resources, and infrastructure. Based on the aforementioned issues, this study aims to explore and formulate an innovative archival storage framework. Unlike previous studies that predominantly focus on conventional filing practices, this research introduces a more holistic perspective by integrating digital transformation, cloud-based archiving, and data governance principles into a unified model. The study's novelty lies in its emphasis on developing a context-specific yet scalable system that aligns with modern archival standards particularly in terms of accessibility, data security, document authenticity, and long-term sustainability.

The results of this research are expected to generate broader institutional impact by providing an evidence-based model that can be adopted not only by the Business Administration Department but also by other academic and administrative units within Politeknik Negeri Medan. In the long term, the proposed model has the potential to strengthen organizational efficiency, support transparent decision-making, and enhance the institution's readiness for digital governance initiatives.

METHOD

Type of Research

This study employs a Research and Development (R&D) design, a type of research commonly used in business and education to develop business systems and educational administration in order to obtain real data from both fields. Such data can subsequently be used to produce, refine, and validate a product. Research and Development aims to focus on developing, expanding, and exploring a theory within a specific discipline. In this study, the researcher seeks to advance the field of business administration, particularly in the area of digital records management. The research uses the ten stages of R&D methodology, namely:

1. identifying potential problems,
2. data collection,
3. product design,
4. design validation,
5. design revision,
6. product testing,
7. product revision,
8. further product testing,
9. final product revision, and
10. analysis and reporting (Rachman et al., 2016)

The electronic archival storage model planned as the output of this study can be illustrated as follows, all archives in the Business Administration Department are stored in four master cabinets:

1. Master Cabinet 1: storage for incoming and outgoing letters
2. Master Cabinet 2: storage for lecturer archives
3. Master Cabinet 3: storage for student archives
4. Master Cabinet 4: storage for departmental operational archives

With the application of an electronic archival storage model, the issues identified in the research background can be effectively addressed. Archives will be stored systematically, and documents can be retrieved in less than one minute. The measurement and observation parameters used in this study include archival storage concepts such as the archival storage system and archival storage procedures. Through the implementation of the electronic archival storage model, documents can be located in under one minute.

Research Subjects

This study was conducted in the Business Administration Department of Politeknik Negeri Medan. Thus, the subjects of this research include the archival management system within the department, involving the Head of the Business Administration Department, administrative and archival staff, as well as lecturers and students as users of the department's archival services.

Research Design

The research design was structured based on the stages and model of the R&D methodology. The research design can be illustrated in the following schematic diagram:

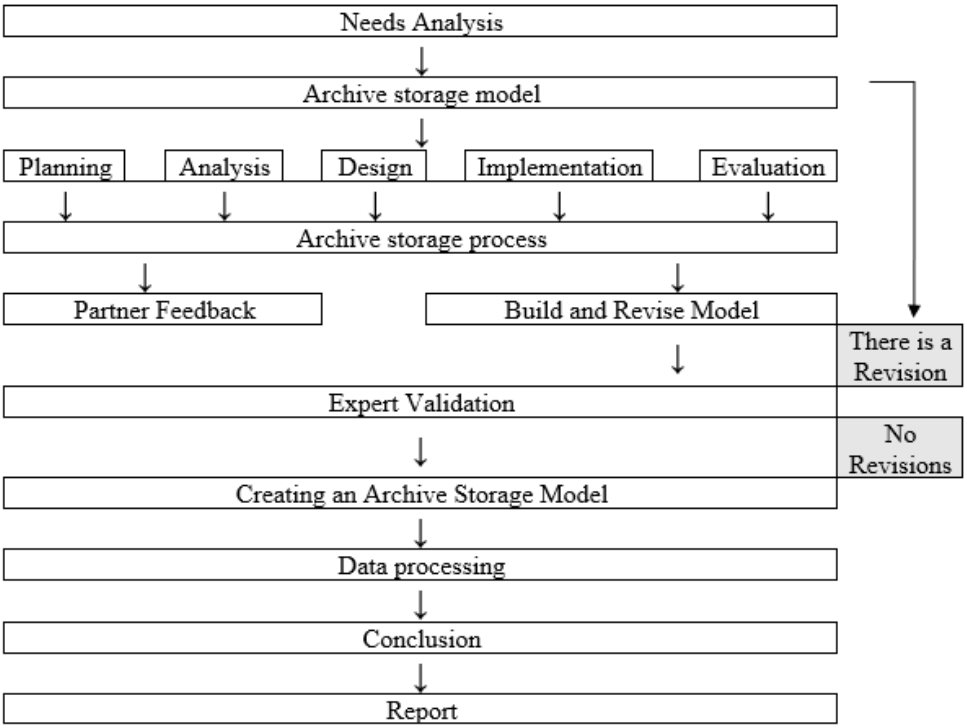

Figure 1. Research Design

Data Collection Techniques

1. Observation

The researcher conducted observations of archival storage practices in the Business Administration Department of Politeknik Negeri Medan.

2. Interviews

The researcher collected data through structured interviews conducted directly with the Head of Department and administrative staff of the Business Administration Department regarding archival storage practices.

In this study, interview techniques were applied to gather data from five respondents (informants) within the Business Administration Department. To facilitate objective data collection, the researcher conducted in-depth interviews based on predetermined indicators, as presented in the table below:

Table 1. Operational Definitions

Variable	Indicators	Informants
Input (Archive Sources)	1. Physical and electronic documents	Head of Department & Administrative Staff
	2. Hardware (computers, servers, scanners)	Head of Department & Administrative Staff
	3. Human resources (archival personnel)	Head of Department & Administrative Staff
	4. Archival policies and SOPs	Head of Department & Administrative Staff
Process (Digital Archive Management)	1. Archival classification and indexing	Administrative Staff
	2. Digitization and uploading to the system	
	3. Storage in a DBMS	
	4. Document management via EDMS	
	5. Backup and synchronization through cloud storage	
Output	1. An efficient, secure, and accessible digital archival storage system	Administrative Staff

	2. Improved speed of archival retrieval	
	3. Increased efficiency in space and workflow	
	4. Implementation of paperless administration	

Data Analysis

The data analysis technique used in this study is thematic qualitative analysis. Qualitative analysis is applied to analyze data by describing and presenting the collected data as they are. The qualitative data analysis process consists of three stages:

1. Data Reduction: the first stage involves reducing or simplifying the data to ensure relevance to the research needs and to facilitate information extraction.
2. Data Display: the reduced data may be presented in various forms, including diagrams, to enable clearer communication and interpretation.
3. Conclusion Drawing: the final stage involves drawing conclusions based on the organized and presented data. These conclusions form the key findings of the study and are included in the conclusion section of the research report.

RESULT AND DISCUSSION

The thematic analysis of interviews with the Head of Department, lecturers, and students reveals four major themes: (1) diversity and origin of archival sources, (2) archival processing and classification, (3) digital archiving infrastructure and human resources, and (4) effectiveness and challenges of digital archive management. The following is a word cloud and treemap based on interview results processed through Atlas.ti:

Figure 1. Word Cloud

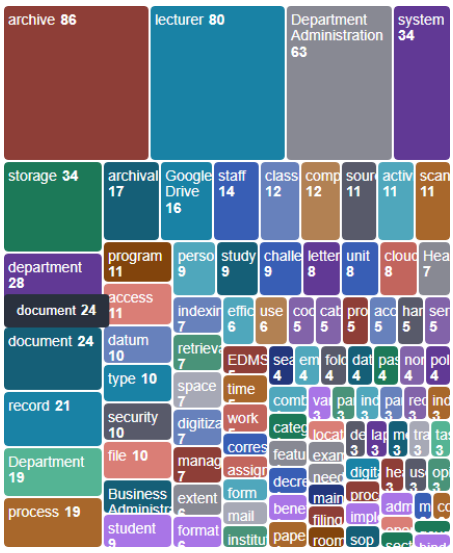

Figure 2. Treemap

Diversity and Origin of Archival Sources

Across informants, archival sources in the Department of Business Administration consist of both physical and electronic documents, covering academic, administrative, and cooperative activities. The Head of Department stated that archives include "written documents (letters) and digital documents," while the lecturer emphasized a broader scope, including "correspondence, financial reports, student data, meeting minutes, and cooperation documents." Students similarly noted the existence of "academic and non-academic archives... available in physical and electronic formats."

Sources of archives originate mainly from internal units, such as administrative offices, lecturers, and students, supplemented by external correspondence from industry partners and government agencies. This aligns with the lecturer's clarification that archives come from "department activities, administrative units, and external institutions."

Archival Processing, Classification, and Documentation

The department implements a structured process involving verification, indexing, coding, classification, and storage. The Head of Department explained that archive handling begins with "verifying archive completeness, followed by indexing… and sorting based on classification." Incoming documents are recorded in both manual ledgers and digital systems.

Classification systems exist but vary in clarity across informants. While the administrative officer claimed that "several classification systems exist," the lecturer noted the use of activity-based categories, where "academic archives are stored separately from personnel archives." Students also observed classification by producing unit and document type. Despite these systems, inconsistencies emerge, particularly in digital indexing, as administrative staff reported challenges such as "determining appropriate index titles," underscoring the need for standardized metadata and taxonomy across units.

Digital Infrastructure, Hardware, and Human Resources

a. Digital vs. Physical Storage

The proportion of physical to electronic archives remains high. According to the Head of Department, the ratio stands at "three to one" in favor of physical documents, indicating slow digital transition.

b. Digital Storage and Security

Cloud storage (Google Drive) serves as the primary repository, though it is managed manually with limited safeguards. Security relies mainly on "password protection," and both parties acknowledged the absence of automatic backup systems or special protections for sensitive data.

c. Hardware Capacity

Digitization relies on desktop computers and scanners; however, equipment is "not fully adequate" and scanners only support A4-sized documents. No dedicated servers or Electronic Document Management Systems (EDMS) are used.

d. Human Resources

Personnel capacity is limited. Only one archival officer is formally responsible, and training is minimal. The administrative office admitted, "No training has been provided," whereas the lecturer reported that only two staff members have received digital archiving training. Furthermore, task division remains unclear, indicating structural gaps in archival governance.

Effectiveness and Challenges of Digital Archive Management

a. Efficiency and Retrieval

Both administrative staff and lecturers find digital retrieval faster than physical search. Features such as "categories" and "keywords" help accelerate access, with the department acknowledging that digital records "sufficiently help in file retrieval."

b. Persistence of Physical Records

Certain physical archives remain indispensable, especially for audits and legally binding documents (e.g., exam score forms, meeting minutes).

c. Limitations and Risks

Major challenges include:

- Technological limitations (inadequate scanners, no integration, limited server capacity)
- Cybersecurity risks, including "hacking attempts, malware attacks"
- Dependence on specific software/hardware
- Long-term digital preservation risks, such as file format obsolescence
- Manual habits and limited digital literacy

d. Paperless Administration

Paperless implementation is partial "not yet optimal," with lecturers estimating only "around 30%" adoption. Nonetheless, document distribution and work efficiency have improved, aligning with literature that highlights digitalization's role in reducing administrative workload and conserving physical space.

CONCLUSION

This study concludes that the management of archival records in the Department of Business Administration reflects a transitional stage between traditional and digital archival practices. Although the department has begun adopting digital systems, physical documents remain dominant, and the digitalization process is constrained by infrastructural, technical, and human resource limitations. The findings indicate the absence of standardized metadata, uneven implementation of classification procedures, and limited technological capacity, all of which hinder full digital integration.

The study also finds that digital archives significantly enhance retrieval efficiency and operational workflow, supporting the potential for broader paperless administration. However, persistent gaps such as inadequate equipment, weak cybersecurity safeguards, minimal training, and reliance on manual practices pose substantial risks for sustainable digital preservation. These challenges emphasize the need for comprehensive policy strengthening, capacity-building programs, and investment in integrated electronic document management systems.

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