

# Documents Archiver System with Integrated Data Analytics and Recommendation Algorithm

Mabingnay, Cyrene Anne A.; Kyle Harold C. Cruz; Joseph Floyd Rosete

(SY 2025-2026) Arellano University, Pasig Campus

DOI: <https://dx.doi.org/10.51584/IJRIAS.2026.11010042>

Received: 06 January 2026; Accepted: 12 January 2026; Published: 01 February 2026

## ABSTRACT

The Documents Archiver System with Integrated Data Analytics and Recommendation Algorithm is a stand-alone desktop application. It is intended to address the requirement for efficient digital document management in settings with poor or nonexistent connectivity. The program enables users to upload PDF and DOCX files, tag them with keywords and document titles, and save them locally and in an integrated MySQL database.

The system offers a contemporary and responsive graphical user interface and is built with JavaScript, Electron, HTML, and CSS for the front end and MySQL for the back end. This makes safe document retrieval, keyword-based search, and easy file organizing possible. To guarantee transparency and traceability, all user actions, including uploads, deletions, and searches, is recorded in real time.

Using JavaScript charting libraries, an interactive dashboard displays visual analytics using bar and pie charts that show document statistics and keyword trends. The solution is perfect for small enterprises, schools, and local government offices that need dependable document management without relying on internet connectivity because it is totally offline.

The system's modular architecture is ready to accommodate such improvements, even though recommended features are saved for later versions. The project performs well in terms of functionality, usability, and dependability when compared to ISO/IEC 25010 software quality criteria. It encourages organized, accessible, and secure digital archiving for a variety of users as a useful and cost-free substitute for enterprise-level solutions.

The system is evaluated by two groups of respondents, users and technical experts using ISO 25010 evaluation form. For future development and upgraded implementation, some measures are recommended such as: (a) implementing multi-user access, (b) data-handling optimization, (c) integration of file encryption, (d) cross-platform expansion, among others.

**Keywords:** Document Archiving System, Metadata Tagging, Keyword-Based Search, Data Analytics, Recommendation Algorithm, ISO/IEC 25010, Electron Framework, JavaScript, SQL Database, Activity Logging, Waterfall Model (SDLC).

## INTRODUCTION

Managing digital documents remains a major challenge in many small offices, academic departments, and public institutions. Although there is a growing push toward digital transformation, these organizations often rely on outdated practices such as storing files in disorganized folders and manually naming documents. This results in frequent inefficiencies, difficulties in locating files, and an increased risk of losing or duplicating important data.

Chandna et al. (2023) observed that many small and medium-sized enterprises, particularly in developing regions, often lack both the technical skills and the financial resources to implement complex document management systems et al. et al., (2023). Even in more developed environments, Wessel et al. noted that smaller organizations tend to prefer lightweight, offline tools due to limitations in staffing and internet reliability et al. et al., (2023). Similarly, Restrepo-Morales et al. (2024) emphasized the importance of using tailored digital tools

over generic enterprise solutions, arguing that custom-fit systems offer more sustainable and practical results for small-scale users et al. et al., (2023).

This study introduces a desktop-based archiving system designed specifically for use in offline environments. The system allows users to upload documents, assign metadata, and search for files using keywords. It also includes visual analytics and a logging feature that records system activities, making it a practical tool for institutions that require transparency and control without depending on internet access.

The goal of the study is to develop and evaluate an offline-capable desktop application for document archiving that incorporates metadata tagging, keyword-based search, visual analytics, and activity logging tailored for small institutions and offices. Specific Objectives are:

1. To design a user interface that allows uploading of PDF and DOCX documents with associated metadata such as title and keywords.
2. To implement a local storage system for saving uploaded documents and their metadata using a local relational database.
3. To enable search functionality using metadata filters such as keywords and titles for efficient file retrieval.
4. To generate visual representations of keyword frequency and document usage trends using integrated analytics.
5. To implement a logging mechanism that captures user actions including uploads, deletions, and search activities.
6. To integrate a summary dashboard that displays key system statistics including recent logs, total documents, and keyword counts.
7. To evaluate the system in terms of its functionality, reliability, and usability based on ISO/IEC 25010 software quality standards

## Scope

The study is designed as a locally installed desktop application focusing on document management, utilizing metadata tagging for indexing and retrieval in an offline environment. The system ensuring data integrity covers the following:

- A locally installed desktop application that operates independently of internet connectivity.
- Designed primarily for use in small offices, academic departments, or administrative units with a single-user or limited-user environment.
- Supports the upload, storage, and management of PDF and DOCX document formats.
- Stores documents in a local file directory while maintaining references through an indexed relational database using relevant metadata.
- Implements metadata-based search and filtering mechanisms to enhance document retrieval efficiency.
- Provides a summary dashboard displaying document activity, keyword usage, and basic analytics.
- Maintains a system log that records user actions such as document uploads, deletions, and search queries for traceability.
- Includes a basic local authentication mechanism to control access and support accountability.)
- Implements a basic local login system for access control and traceability.

## LIMITATION

These are the limitations of the study:

- Limited to a single-user, offline desktop environment;
- Does not support network-based access or cloud integration;
- No multi-user management or role-based access control (only basic local login for identification);
- Lacks advanced security measures such as encryption, file-level permissions, and session handling;
- Automated backups, OCR processing, and real-time collaboration are not included;
- Recommendation algorithms are not yet implemented but may be considered for future updates.

## Theoretical Framework

The Documents Archiver System is grounded in established theories and principles of digital archiving, metadata-based information organization, and desktop application system design. These theoretical foundations guide both the functional design and operational behavior of the system, particularly in the context of document handling within small offices and academic units operating in offline environments.

The principle of digital archiving theory emphasizes the systematic storage, preservation, and retrieval of digital records to ensure long-term accessibility and data integrity. This theory informs the system's approach to local document storage, file organization, and controlled access, ensuring that archived documents remain consistent, reliable, and traceable over time.

The system also adopts concepts from metadata theory, which posits that descriptive attributes such as titles, keywords, and classifications enhance information retrieval efficiency. By implementing metadata tagging and indexed databases, the system enables structured organization and rapid search of documents, directly supporting improved retrieval accuracy and reduced search time.

Additionally, the framework is influenced by information retrieval theory, which focuses on optimizing search mechanisms to match user queries with relevant documents. This theory supports the implementation of metadata-based search tools and keyword analytics within the system.

From a system design perspective, the framework incorporates principles of lightweight desktop application architecture, emphasizing usability, performance efficiency, and independence from network connectivity. These principles justify the system's offline operation, local database integration, and simplified authentication mechanism.

Collectively, these theoretical foundations shape the system's core features and constraints, ensuring that the Documents Archiver System delivers an efficient, reliable, and practical solution for offline digital document management.:

1. General Systems Theory (GST) Bertalanffy (1968) - views a system as a collection of interacting components that work together toward a common goal. In this project, each system module document uploader, search engine, analytics dashboard, and logging tool contributes to the overall objective of efficient and organized document management. The modular design supports maintainability and future extensibility (Skyttner, 2005).
2. Information Retrieval Theory (IRT) - Baeza-Yates & Ribeiro-Neto (2011) Instead of analyzing the full content of documents, this project applies IRT principles by using metadata as a searchable index. This aligns with the system's offline limitations while ensuring efficient file access and organization.

3. Data-Driven Decision Making (DDDM) - Mandinach, Honey, and Light (2006) defined Data-Driven Decision Making as the practice of using collected and analyzed data to guide organizational choices. In small businesses like Mashikketta Restaurant, many decisions are often made from habit or instinct. The system aims to change this by offering insights based on actual sales and inventory records. This encourages management to rely more on evidence rather than intuition.
4. Keyword Frequency Matching (Cryptographic Hash Functions) - Manning, Raghavan, & Schütze (2008) This basic algorithm counts the number of occurrences of each keyword in the metadata and identifies the most common tags. It enables the system to generate visual analytics such as bar and pie charts and serves as a foundational approach for future, more advanced search and recommendation functions. The use of keyword frequency rather than semantic analysis makes it suitable for offline applications with limited computational resources.

### Conceptual Framework

The study's conceptual framework, which is based on the Input-Process-Output (IPO) model. It leads the flow of data through the Documents Archiver System with Integrated Data Analytics and Recommendation Algorithm and displays how inputs are processed to produce relevant outputs, with feedback assuring continual development.

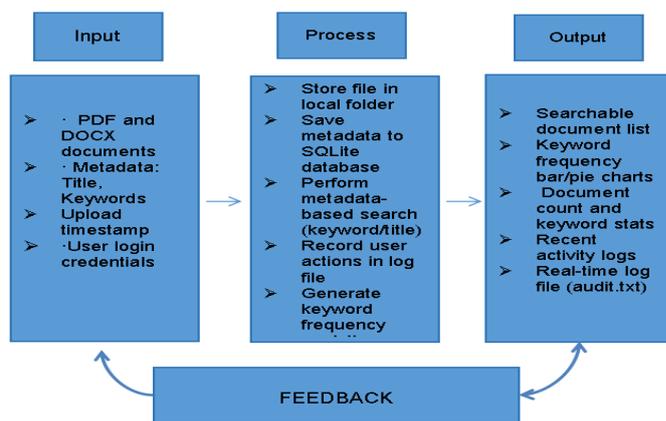


Figure 1. Input-Process-Output Model of the Documents Archiver System with Integrated Data Analytics and Recommendation Algorithm

#### 1. Input

At the beginning of the system’s operation, users interact with the platform by providing specific types of data. These include uploading documents in PDF or DOCX format, assigning metadata such as titles and keywords, and entering their login credentials. Each upload is also marked with a timestamp. All of these user-provided details are entered through the system’s graphical user interface and serve as the initial building blocks for organizing, storing, and retrieving files within the application.

#### 2. Process

Once the input is received, the system performs a series of internal operations to store, track, and analyze the data. Uploaded documents are saved in a designated local folder, while the metadata is recorded and managed within a local SQL database. The system allows users to search for documents using filters based on keywords or titles, enabling efficient retrieval. At the same time, the system keeps track of user actions such as uploads, deletions, and searches by logging each event in a plain-text file. These logs promote transparency and can be reviewed for accountability. Furthermore, the system evaluates the stored metadata to generate keyword frequency statistics and document usage patterns, which are then transformed into charts and graphs for display on the system’s dashboard.

### 3. Output

The system delivers outputs such as real-time. The outcomes of the system's processes are presented to the user in several forms. These include a filtered list of documents matching the search queries, visual analytics such as bar and pie charts showing keyword trends and document volume, and a display of recent user activity. Additionally, the system provides access to the log file, allowing administrators to monitor system usage and verify user actions. These outputs support efficient document management, enhance decision-making, and ensure operational transparency.

### Significance of The Study

This study offers practical benefits to several key groups who may face limitations in implementing costly or complex document management solutions. Each stakeholder identified below stands to gain from the development of a simple, offline, and metadata-driven desktop archiving system.

The beneficiaries of the study are:

- **Small Offices and Academic Units** Many local offices and academic departments lack access to enterprise-level digital systems. This study proposes a lightweight and offline-capable solution that improves how these institutions store, retrieve, and manage digital documents without requiring internet connectivity or advanced IT infrastructure.
- **Administrative and Records Staff** - Personnel responsible for handling files can benefit from the system's user-friendly interface, keyword-based search tools, and visual analytics. The ability to log user activity also helps staff track document actions, reducing errors and promoting accountability in daily operations.
- **IT Students and System Developers** – This project serves as a practical example of how JavaScript-based applications built with Electron can integrate local database storage, data visualization, and basic search algorithms within a desktop environment. IT students and entry-level developers can learn from its modular architecture and extend it in future versions with features such as multi-user access or PDF reporting.
- **Institutions in Low-Connectivity Areas** - The offline functionality ensures usability in rural or underserved locations where stable internet access is unavailable. This helps bridge the gap in digital transformation and supports more inclusive adoption of digital tools in public and educational sectors.

## REVIEW OF RELATED LITERATURE

The synthesis of the literature emphasizes the critical need for secure, efficient, and locally sustainable digital document management systems in resource-constrained settings. International and local research consistently validates the system's core reliance on well-structured metadata as the fundamental mechanism for ensuring document integrity, search efficiency, and archival authenticity in the absence of full-text analysis.

The core design is strongly supported by findings that metadata alone can ensure document authenticity and integrity (Pacheco et al., 2023; Daluyon et al., 2023), especially when capturing provenance and usage logs. This focus on structured data, rather than full-text, is highly effective for efficient retrieval in diverse or large collections (Al-Hamami & Ahmad; Rios & Alejandro, 2023). Furthermore, high-quality metadata is deemed essential for reliable retrieval (Choudhury et al., 2023), and local studies confirm that metadata tagging significantly improves file location accuracy in academic and local government archives (Daluyon et al., 2023; Sevilla et al., 2023).

Architecturally, the project aligns with the preference of small organizations for cost-controlled, adaptable, in-house systems over expensive cloud or outsourced solutions (Rieger et al., 2022). Multiple studies advocate for lightweight, standalone, offline applications for schools and small administrative units that lack consistent internet access or technical resources (Villanueva, 2023; Gamido et al., 2023). The use of a local, file-based relational database like SQLite (Reyes & Balagtas, 2023) is proven to be a practical and dependable choice for

small-scale, offline environments. The design also incorporates features validated by research, such as the need for log-tracking to promote accountability (Raboy et al., 2023) and the future-readiness for tag-based analytics and dashboards to track usage trends (Bellotti Furtado & Esmin, 2023; Khosrow-Pour, 2023).

The proposed Documents Archiver System bridges these insights by fulfilling the demand for a user-friendly, standalone desktop application that provides metadata-based indexing, traceability via logging, and integrated data analytics. This synthesis lays the technical groundwork for converting conventional administrative filing into a modern, reliable, and self-sufficient digital framework that promotes data accessibility and accountability in resource-constrained, offline environments.

### Synthesis

The Documents Archiver System's design and requirement are firmly validated by the literature synthesis, which positions it as a technically viable and contextually relevant option for small institutions.

For effective retrieval, improved accuracy, and document authenticity verification, structured information (titles, keywords, and timestamps) is essential, according to the examined works taken together (Pacheco et al., 2023; Al-Hamami & Ahmad; Daluyon et al., 2023). According to research, standalone desktop platforms that use lightweight solutions like SQLite are useful and affordable for businesses with little internet access (Gamido et al., 2023; Reyes & Balagtas, 2023; Rieger et al., 2022). Additionally, by monitoring document consumption and accountability, the system's sophisticated features visual analytics and user activity recording, in particular are supported as instruments that encourage transparency and well-informed decision-making (Khosrow-Pour, 2023; Raboy et al., 2023). The project effectively offers a dependable, independent, and offline solution for document management issues in tiny administrative units by incorporating these proven ideas.

## METHODOLOGY OF THE STUDY

The methodological approach for developing, implementing, and assessing the Documents Archiver System with Integrated Data Analytics is described in this chapter. The study systematically examined system performance and user feedback in relation to ISO/IEC 25010 software quality criteria using a quantitative research design. The Waterfall Model, a sequential and linear Software Development Life Cycle (SDLC) methodology consisting of discrete phases from requirements analysis to deployment and maintenance, was closely followed throughout development. Primary data were collected through survey questionnaires and structured observation of office staff using the system in realistic document management scenarios, while secondary data were gathered from existing literature, standards, and related studies to support system design and evaluation. In the office-based testing, participants performed common document-related tasks, such as uploading, tagging, searching, and generating summaries of PDF and DOCX files, reflecting real-world usage. Using a 4-point Likert scale, the Weighted Mean and Frequency Percentage were calculated to statistically analyze the evaluation findings and measure user acceptability levels.

For the system development life cycle, the study adopted the Waterfall software development methodology, as shown in Figure 2.

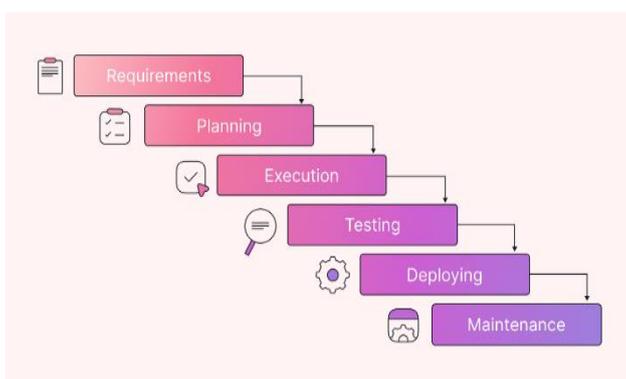


Figure 2: SDLC Waterfall Model

The Waterfall Model, a conventional and methodical methodology in the Software Development Life Cycle (SDLC), is used in this study. The approach is highly effective for projects with well-defined needs since it proceeds in a straight line and each step depends on the completion of the one before it.

In order to identify document-related difficulties, the process started with discussions and meetings between administrative users and personnel. Both functional and non-functional system requirements are created using these insights.

Planning: The IPO Model, System Architecture, and Data Flow Diagram are all included in the architectural designs and diagrams that are produced. User accessibility and offline functionality are given top priority in the GUI's layout and module structure.

Implementation: JavaScript served as the main programming language for building the system through the Electron framework. A local SQL database handled file records, activity logs, and metadata storage, while HTML and CSS are used to design a clean, interactive, and modern graphical user interface.

Testing: User acceptance testing (UAT), integration testing, and unit testing are all conducted extensively across all modules. As issues arose during each cycle, they are resolved.

Deployment: The finished system was installed on target computers after being packaged in an executable format. Initial walkthroughs included demonstrations and sample data to simulate routine office operations.

Maintenance: After deployment, feedback from users and technical evaluators was gathered to guide system enhancements. Future improvements, such as adding new features or supporting multiple users, can be implemented easily due to the system's modular design.

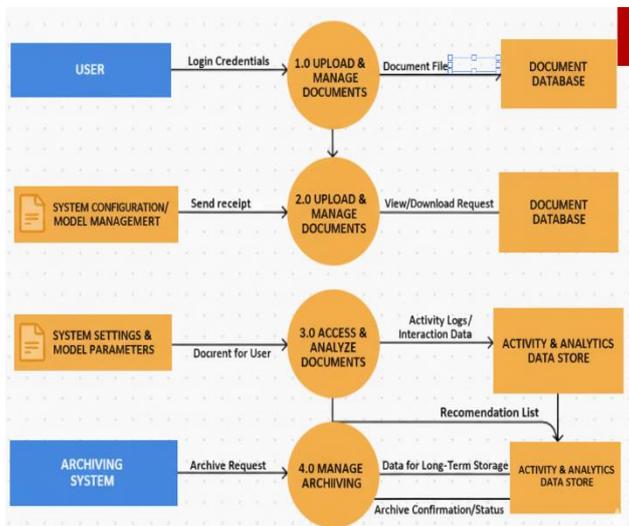


Figure 3: Context Diagram

A high-level summary of the Document Archiving System and its interactions with administrators and users is given by the context diagram. The system's primary functions include processing user-uploaded documents with metadata tagging, responding to search queries using a specialized search engine, and producing reports and visualizations. While administrators are in charge of user management, system configurations, and activity logs, users engage with the system by uploading content, adding descriptive metadata, and conducting searches. The system keeps an organized metadata repository to facilitate effective search capabilities and depends on local storage for document retention. With metadata acting as the vital connection between user search parameters and stored documents, data moves fluidly between these elements. Both users and administrators can benefit from the architecture's support for document analysis and reporting features, which provide insightful information about system activity and document patterns. This approach maintains thorough tracking through in-depth activity logs and guarantees a safe, standalone document management system that runs separately from cloud services.

## Respondents of The Study

Two groups of respondents participated in the study: user respondents and technical respondents, following the ISO/IEC 25010 Software Quality Model. Thirty anonymous users, consisting of recent graduates, academic staff, administrative personnel, and small office professionals with basic to intermediate computer skills, evaluated the system in terms of usability, performance efficiency, and functional suitability, focusing on responsiveness, navigation, and ease of completing essential document management tasks. Meanwhile, twenty anonymous technical respondents, including computer science graduates, software developers, system analysts, and IT professionals, assessed the system based on reliability, security, maintainability, and data handling accuracy, with emphasis on backend stability and compliance with software standards. Purposive sampling was used to select respondents with relevant experience in similar software applications to ensure the validity and relevance of the evaluation results.

## Development and Evaluation Procedure

The Documents Archiver System is

The Waterfall Model's sequential phases were followed in the development of the Documents Archiver System using the Software Development Life Cycle (SDLC) framework.

With a SQL-based database for local data storage, the finished solution is a stand-alone desktop application built with Javascript and Electron.

HTML and CSS are used in the design of the graphical user interface to create a contemporary and intuitive experience.

During the system evaluation phase, a quantitative research approach is used to evaluate the system's quality in compliance with ISO/IEC 25010 Software Quality Model.

End-users and technical experts are given standardized assessment questionnaires to complete in order to gather data.

The system's degree of compliance with the ISO/IEC 25010 quality characteristics are ascertained by analyzing the evaluation data using Weighted Mean and Frequency Percentage based on a 4-point Likert Scale.

The system is explicitly evaluated using the following important ISO/IEC 25010 quality attributes:

- Functionality – Capability and accuracy in carrying out essential search, labeling, and archiving functions.
- Reliability – includes stability, data security, and uninterrupted operation.
- Efficiency – Processing speed and system responsiveness.
- Usability – User happiness, intuitiveness, and ease of learning an interface.
- Security – Preserving data integrity, confidentiality, and access control (in contrast to the rudimentary local login system).
- Portability – Compatibility within the specified desktop environment.

## Data Analysis Plan

The system evaluation is grounded in the ISO/IEC 25010 Software Quality Model, an internationally recognized framework for assessing software quality. This standard was selected because it emphasizes essential quality characteristics relevant to the system, including functional suitability, reliability, performance efficiency, usability, security, and portability. Functional suitability focuses on the system's capability and accuracy in

performing core document archiving functions such as searching, labeling, and storage. Reliability evaluates system stability, data protection, and continuous operation during use. Performance efficiency assesses processing speed and system responsiveness, particularly during document retrieval and indexing. Usability examines user satisfaction, interface intuitiveness, and ease of learning. Security measures the system's ability to preserve data integrity, confidentiality, and access control within the context of a basic local authentication mechanism. Portability considers the system's compatibility and consistent operation within the specified desktop environment.

The study employed basic statistical techniques to examine participant replies. The distribution of responses is shown using the frequency percentage, and the total feedback from the two sets of respondents is summarized using the weighted mean. The system's rating for each of the ISO 25010 attributes was easily visible thanks to these resources.

The study also used a four-point Likert scale to gather responses. Participants rated their level of satisfaction with each statement on a scale from 1 (meaning "Strongly Disagree") to 4 (meaning "Strongly Agree"). This method made organizing the input and connecting it to the software quality requirements easier. This enables the researchers to evaluate the system's performance in terms of security, dependability, usability, and other important factors.

This process ensured the evaluation's organization and objectivity. Using simple statistical tools and ISO 25010 standards, the researchers were able to fairly evaluate the system and pinpoint both its advantages and areas for improvement.

## The System

The system employs session-based authentication and encrypted credentials for security without token complexity, and it has a simple role model with User, Admin, and System roles. Clear permissions control access: Users access and arrange their personal files, administrators control settings and archives, and the system takes care of background maintenance. With each folder showing its document kinds, count, storage utilized, and performance score, file management places a strong emphasis on comprehensive metadata and analytics. Records can be moved and compressed using integrated archiving tools, and dashboards offer information on system performance, file-type breakdowns, and storage trends. In order to provide a safe, user-friendly desktop archive that puts visibility and control first, thorough audit logging records all user actions and system events, guaranteeing compliance and streamlining troubleshooting.

Some of the user interfaces are shown as follows:

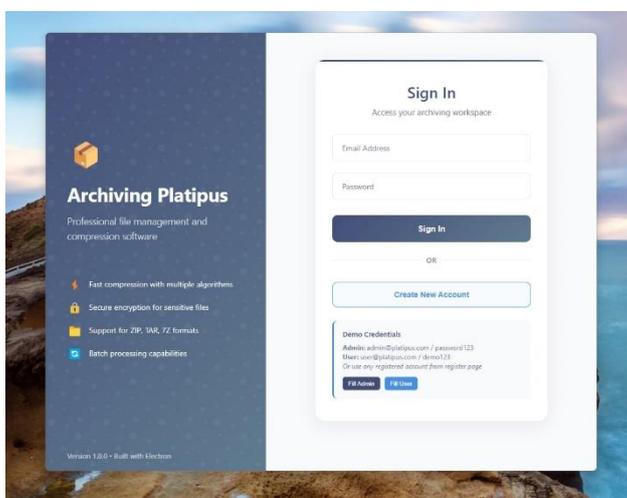


Figure 4: Login and Authentication Page

The login and authentication interface is shown in Figure 4. Users enter their credentials at this secure access point. The system allows access and enforces the specified role-based permissions for either an administrator or

a user after verification. This procedure creates the basic security border and initiates the exact access control that controls every operation that takes place within the program after that.



Figure 5: File Dashboard

This figure displays the file dashboard interface. It provides a comprehensive overview of key file management metrics, including the total number of documents, storage used, count of compressed files, system performance score, and a breakdown of file types. This consolidated view aids in monitoring resource utilization, tracking organization efficiency, and supporting informed archiving decisions.

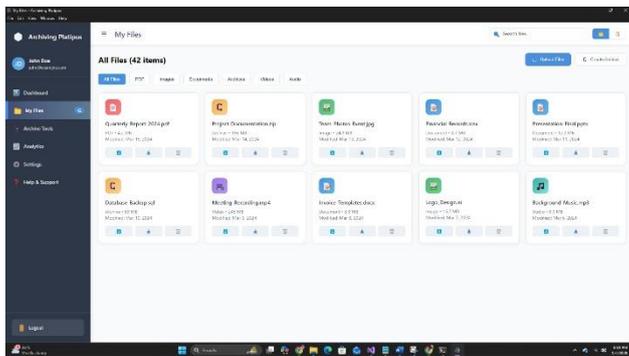


Figure 6: My Files Overview Page

The file management dashboard is shown in Figure 6. This interface presents all user files categorized by type (PDF, Images, Documents, Archives, etc.) along with metadata such as file size and modification date. Key navigation options include Archive Tools, Analytics, Settings, and Help & Support, allowing users to manage, analyze, and configure their stored content efficiently. The layout supports quick access to recently modified files while maintaining role-based visibility and control over system resources.

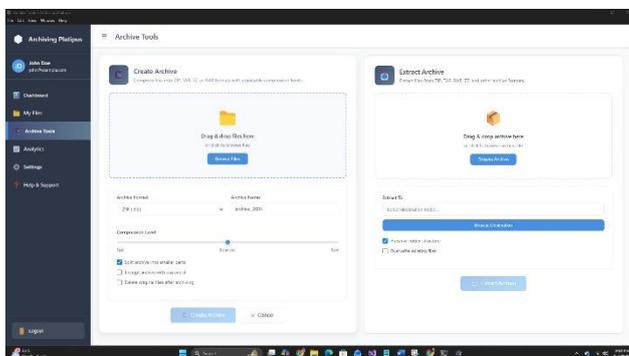


Figure 7: Create and Extract Interface

The archive management interface is shown in Figure 7. Users can compress files into formats such as ZIP, TAR, YZ, or RAR with configurable compression levels and options like splitting, encryption, and deletion of originals. They may also extract files from supported archive formats, choose extraction destinations, and

configure overwrite behavior. This unified toolset enables efficient file packaging and unpackaging while integrating with the system’s file management and permission controls.

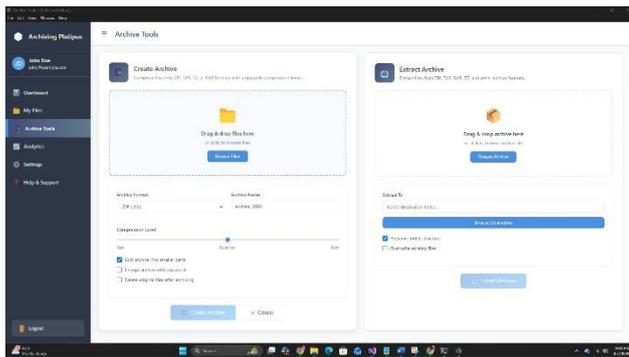


Figure 8: Archive Tools Replication

This figure repeats the interface displayed in Figure 8, confirming consistent presentation and functional layout across user sessions. It reaffirms the system’s stable design for archive creation and extraction, ensuring reliable user experience and interface familiarity in repeated use scenarios.

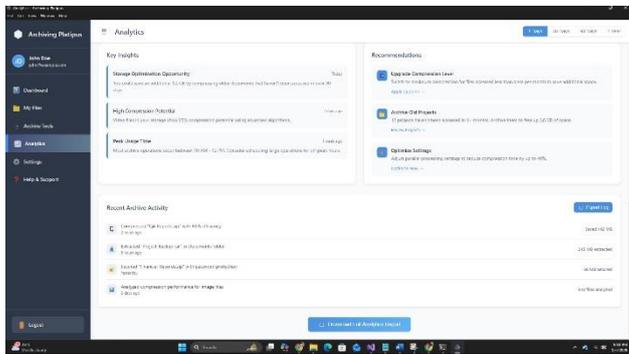


Figure 9: Analytics Dashboard

This figure repeats the interface displayed in Figure 9, confirming consistent presentation and functional layout across user sessions. It reaffirms the system’s stable design for archive creation and extraction, ensuring reliable user experience and interface familiarity in repeated use scenarios.

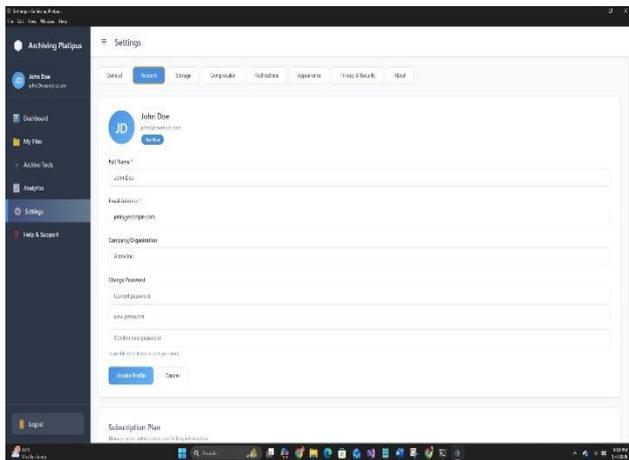


Figure 10: Account Management Settings

The account settings interface is shown in Figure 10. Here, users can view and edit their profile details including name, email address, and organization. The panel also allows password changes and provides access to subscription plan management. This section centralizes personal account configurations and ties user identity to system access and billing controls.

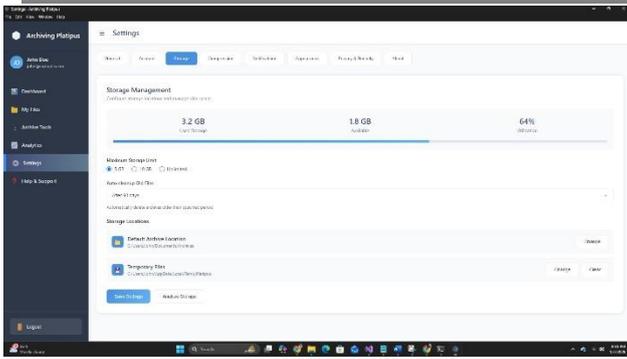
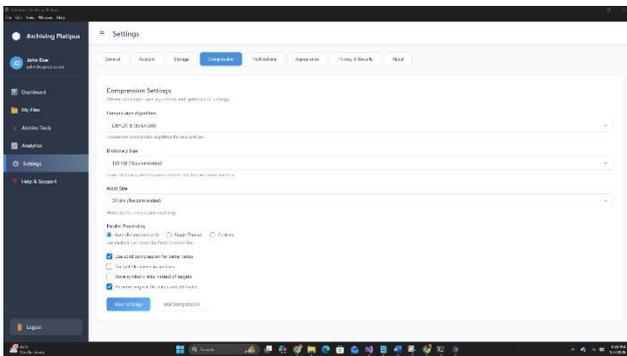


Figure 11: Storage Management Settings

The storage configuration interface is shown in Figure 11. It displays storage utilization metrics, allows setting maximum storage limits, and configures auto-deletion rules for old files. Users can also customize storage locations for archives and temporary files. These settings help manage disk space efficiently and automate cleanup based on user-defined policies.



### Assessment: Summary of Respondents on the System

The distribution of respondents who took part in the system evaluation is shown in the table. They are separated into user and technical groups, and the ISO/IEC 25010 Software Quality Model is used to assess usability, functionality, and performance in a fair and reliable manner. This breakdown makes it easier to see who provided comments based on their role and area of expertise.

| Respondents (groupings) | Size (n)  | Percentage    |
|-------------------------|-----------|---------------|
| Users                   | 30        | 60.0          |
| Technical               | 20        | 40.0          |
| <b>Total (n)</b>        | <b>50</b> | <b>100.0%</b> |

Table 1: Distribution of Respondents

Table 1 shows the total number and percentage of participants in the evaluation.

| 7. Criteria (ISO25010)  | Respondents (50) |    |                |    |
|---|------------------|----|----------------|----|
|   | Users (30)       |    | Technical (20) |    |
|   | WM               | VI | WM             | VI |
| 1. Functionality: The system provides all necessary features for storing and retrieving user files.   | 3.75             | SA | 3.62           | SA |
| 2. Reliability: The system performs file operations with consistent stability during normal use, with errors handled appropriately to minimize interruptions and prevent data loss. | 3.70             | SA | 3.70           | SA |
| 3. Efficiency: The system handles large volumes of files and metadata without performance issues.   | 3.50             | SA | 3.63           | SA |
| 4. Usability New users can easily learn how to operate the system.  | 3.56             | SA | 3.52           | SA |
| 5. Security The system ensures that only authorized users can access their documents.   | 3.59             | SA | 3.65           | SA |
| 6. Portability: The system can be installed and executed on multiple compatible desktop machines with minimal configuration requirements.   | 3.45             | SA | 3.48           | SA |
| Overall Average Mean  | 3.59             | SA | 3.60           | SA |

Table 2: Summary and Comparison of Evaluations of Respondents

Perceptions of the system's quality are consistently positive, according to the assessment results from both respondent groups: Users (30) and Technical Experts (20). Both the technical group's slightly higher mean of 3.60 and the users' overall mean rating of 3.59 fell into the category of "Strongly Agree."

Reliability shows up as one of the best qualities for both groups throughout the assessed criteria, demonstrating that the system executes file operations consistently and without unforeseen faults. Among the categories, technical responders gave security the highest rating, indicating a high level of confidence that the system appropriately restricts access and safeguards documents. In the meantime, users emphasized usability and usefulness with similarly high marks, demonstrating that the system offers necessary functions and is manageable even for novice users.

Even though both groups gave portability the lowest ratings, the ratings still show a positive opinion, suggesting that deployment and installation are still acceptable but might be improved. Overall, the findings demonstrate that the system performs effectively in terms of dependability, security, functionality, and usability and is in good alignment with ISO 25010 quality standards.

## Ethical Considerations

Throughout the creation and assessment of the Document Archive System with Integrated Data Analytics and Recommendation Algorithm, the researchers made sure that all ethical standards were closely adhered to. Each responder willingly provided informed consent after being fully informed about the project's goals, methods, and possible advantages. Additionally, participants were given the assurance that they could stop participating at any time without repercussions.

Strict protocols are put in place to safeguard information security and confidentiality because the system handles analytical data and organizational records. All gathered data was safely stored using encrypted forms that were only accessible to authorized researchers, and no private or sensitive information was revealed. To guarantee that all system testing and analyses were carried out truthfully and without any kind of result manipulation or alteration, ethical norms for data handling were respected.

In order to ensure that no psychological, operational, or professional risk was imposed, the team also took measures to ensure that each participant was treated fairly and with respect. The transparency and legitimacy of the entire investigation were further supported by the researchers' confirmation that they had no conflicts of interest.

## SUMMARY AND CONCLUSION

The system is developed JavaScript was used for application logic within the Electron framework, and HTML, CSS, and JavaScript are used to construct the graphical user interface. Activity logs, information, and records are managed using a local JavaScript-based database. The system is created to offer a dependable and portable document archiving option to workplaces and small enterprises without internet connection. Document uploading, metadata tagging, keyword-based search, data analytics visualization, and an integrated activity recording system are some of its main features.

The evaluation is conducted using the ISO 25010 software quality model and involved both technical respondents and end users. The results showed that the system worked well in terms of functionality, dependability, usability, and efficiency. Technical reviewers highlighted the system's precision and stability in database operations, while users considered the interface to be visually ordered and intuitive due to HTML and CSS elements.

The outcomes also demonstrated that the system's goal of simplifying document management in offline environments is achieved. The search feature made finding files much faster, and the analytics dashboard provided useful data on document activity and keyword trends. The logging mechanism's effective tracking of user activity, such as uploads, deletions, and searches, guaranteed accountability.

A few minor issues are found during testing, including decreased performance while handling big file sizes and the absence of multi-user capability. However, these had no discernible effect on usability or general functionality. The overall high satisfaction percentages among respondents show that the system is dependable, easy to use, and perfect for small enterprises.

## RECOMMENDATION

In light of the study's conclusions and the areas that require improvement, the following recommendations are made to guide future development and implementation efforts:

- **Implementing Multi-User Access:** This is the login interface where a user submits their credentials. The system authenticates the user and upon verification automatically assigns them to their predefined role, either User or Admin. This immediate role assignment activates the specific set of permissions that govern their access and actions within the entire application.

- Data handling optimization: Simplify SQL queries, use data caching, and enable asynchronous operations to expedite the processing of big files to boost system efficiency.
- Integration of File Encryption: Use encryption techniques for saved documents to enhance data security and protect private information.
- Automatic Backup and Restore Features: To safeguard data in the event of a system failure or accidental deletion, include a simple database backup and restore tool.
- Advanced Search Filters: Extend your search parameters to include date ranges, file kinds, and metadata combinations for faster and more precise retrieval.
- User Interface Improvement: Keep using HTML and CSS for design flexibility to update the layout, make it more accessible, and enhance the visual appeal.
- Cross-Platform Expansion: Make a companion version for the web or mobile to increase accessibility and mobility across devices.

These suggestions are meant to improve the system's functionality and guarantee restaurant operations' long-term effectiveness, security, and dependability.

## REFERENCES

1. Al-Hamami, S. A., & Ahmad, S. N. (n.d.). Metadata in multilingual news archives: A systematic review. *Journal of Information Science and Technology*, 3, 1–15.
2. Angala, D., Casugay, B. C., Estillore, H. M., & Gamido, M. V. (2023). Development and implementation of a document management system for Ilocos Sur Polytechnic State College, Tagudin Campus. *Journal of Management and Business Education*, 6, 161–168.
3. Bellotti Furtado, C. M., & Esmín, A. A. B. (2023). A hybrid recommendation system for digital libraries based on user profiles and tag interactions. *Journal of Information Science*.
4. Choudhury, S., et al. (2021). Automatic metadata extraction from scanned academic documents. *International Conference on Document Analysis and Recognition*.
5. Choudhury, S., et al. (2023). MetaEnhance: A framework for metadata quality improvement. *Proceedings of the ACM/IEEE Joint Conference on Digital Libraries*.
6. Daluyon, et al. (2023). Metadata tagging to improve retrieval efficiency in academic archives. *University of Rizal System Research Journal*.
7. Gamido, M. V., Gamido, H. V., & Macaspac, D. J. P. (2023). Electronic document management system for local area network-based organizations. *International Journal of Computer Networks and Communications Security*, 11, 24–30.
8. <https://iso25000.com/index.php/en/iso-25000-standards/iso-25010>
9. Imwadsana, B., Chaihirunkarn, C., Jaichoom, A., & Thanaphatsiri, S. (2011). DocFlow: A document workflow management system for small office. *International Conference on Information and Computer Science*.
10. International Organization for Standardization. (2011). ISO/IEC 25010: Systems and software quality requirements and evaluation (SQuARE) – System and software quality models.
11. Pacheco, A., Guardado da Silva, C., & Vieira de Freitas, M. C. (2023). A metadata model for authenticity in digital archival descriptions. *Records Management Journal*, 33, 273–286.
12. Raboy, et al. (2023). Offline archive system for local government units. *Philippine Information Systems Journal*.
13. Reyes, J., & Balagtas, R. (2023). Student record management using SQLite database. *Philippine Computing Education Research Conference*.
14. Rieger, O. Y., Schonfeld, R., & Sweeney, L. (2022). The effectiveness and durability of digital preservation and curation systems. *Ithaka S+R Report*.
15. Rios, J., & Alejandro, M. (2023). Metadata-driven search effectiveness for local institutions. *Journal of Information Management Philippines*.

16. Sevilla, et al. (2023). Digitization and metadata organization of municipal records. *Journal of Local Government Technology*, 6(2).
17. Villanueva, R. (2023). Offline digital systems for resource-constrained educational institutions. *Digital Transformation Studies Journal*.