

Developing a Documentation Management System (DMS) at the Road Transport Department (JPJ) Malaysia: System Planning, Analysis, and Design Approach at JPJ Negeri Perak

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Abstract: This study designs and develops a documentation management system (DMS) at JPJ Negeri Perak, called e-Doc @ JPJ Perak, aimed at improving efficiency and accessibility in record handling of the existing physical filing systems. Based on the 7-phase System Development Life Cycle (SDLC model) and ISO 15489 and ISO 30301, ISO/IEC 27001, and usability principles from Nielsen and DCMI metadata standards, a structured interview was conducted with five experts representing key operational roles. The study has identified the main weaknesses of the existing manual system and proposes an improved model. The finding has also shown that the manual system causes delays and dependency on specific staff. The proposed e-Doc @ JPJ Perak emphasizes user-friendliness, secure access, and free-fast retrieval, aligning with Malaysia's Public Sector Digitalization Strategic Plan 2021–2025, especially at the JPJ documentation section.

Keywords: *Documentation management System, e-Doc @ JPJ Perak, Road Transport Department (JPJ) Malaysia, Records Management, System Development Life Cycle (SDLC).*

1. Introduction

Efficient document management plays a vital role in ensuring organizational effectiveness, particularly within government agencies that handle large volumes of official records on a daily basis. At the JPJ Negeri Perak, thousands of documents are processed each year, including personnel records, internal circulars, policy directives, and correspondence with federal and state agencies. Despite the increasing demand for efficiency and accountability, JPJ Negeri Perak still relies heavily on a manual documentation system that uses physical filing and human retrieval.

This traditional approach, though functional, presents several limitations. The process of locating documents is time-consuming and depends heavily on specific officers who are familiar with the filing system. Any staff absence or turnover can disrupt operations and cause delays in retrieving important information. Furthermore, manual systems are vulnerable to misfiling, document loss, and physical degradation of paper records over time. These challenges not only hinder daily productivity but also affect the accuracy, accessibility, and reliability of administrative decision-making. Manual filing causes delays, misfiling, and inefficiency; recent studies recommend digital systems like DMS and workflow automation to overcome these limitations (Mushayabasa & Ngulube, 2025; Ivanova, 2024; Jordana et al, 2022).

Therefore, utilizing digital systems with SDLC enhances efficiency by resolving manual data issues, ensuring user-focused design, comprehensive planning, and effective

problem-solving throughout software development (Vishal Shah, (2025). The Malaysian Public Sector Digitalization Strategic Plan (2021–2025) also underscores the importance of adopting digital transformation across government departments. It emphasizes efficiency, transparency, and security in managing records and services. However, the implementation of advanced systems such as enterprise document management software or cloud-based platforms is often constrained by limited budgets, technical expertise, and infrastructure, especially at state-level agencies like JPJ Negeri Perak.

Recognizing these challenges, this study aims to explore a practical and cost-effective solution to improve document management efficiency. This study is limited to addressing the first and second objectives of the three established objectives or the overall study aim.

- i. To analyze the needs and expectations of JPJ staff regarding the documentation management system (DMS);
- ii. To design a free and user-friendly DMS that can facilitate the efficient JPJ document search and retrieval; and
- iii. To test the developed DMS within the JPJ to evaluate its usability and performance.

By addressing these objectives, the study contributes to the ongoing efforts of digital transformation in the Malaysian public sector. The proposed solution, known as e-Doc @ JPJ Perak, seeks to demonstrate how digital innovation can begin with existing tools and local expertise without requiring major financial investment. This introduction also sets the foundation for understanding how user-driven design and low-cost technology can significantly enhance operational efficiency in government record management.

2. Literature Review

The SDLC model improves document management by providing structured planning, accuracy, and efficiency compared to manual or semi-manual methods, reducing errors and delays (Pressman, 2019). Table 1 highlights key references supporting SDLC implementation for developing a DMS in government agencies. These sources, from global standards to Malaysian guidelines (MAMPU) and academic studies, demonstrate how SDLC ensures structured development, quality assurance, and effective digital transformation within public sector document management systems.

Thus, effective record management is essential for ensuring accountability, transparency, and operational efficiency in both public and private organizations. Globally, several international frameworks have been established to guide best practices in documentation management. ISO 15489 provides the fundamental principles for record creation, maintenance, and disposal, ensuring that documents remain authentic, reliable, and accessible throughout their lifecycle. Complementing this, ISO 30301 introduces the concept of a management system for records (MSR), integrating recordkeeping policies with continuous performance monitoring and improvement, similar to quality management systems such as ISO 9001.

Table 1: A summary of academic sources for SDLC application in developing a local government Document Management System (DMS)

Type	Source	Relevance
Academic Journal	Pressman, R. S. (2019). <i>Software Engineering: A Practitioner's Approach</i> (8th Ed.). McGraw-Hill.	Comprehensive SDLC framework covering requirements, design, implementation, testing, deployment, and maintenance.
Professional Standard	ISO/IEC 12207:2017 – <i>Systems and Software Engineering — Software Life Cycle Processes</i> .	Global standard defining software lifecycle processes for public systems.
Government Reference	Malaysian Administrative Modernisation and Management Planning Unit (MAMPU) — <i>Public Sector ICT Strategic Plan Guidelines</i> .	Local policy framework aligning with SDLC best practices for government agencies.
Research Study	Sommerville, I. (2020). <i>Software Engineering</i> (10th Ed.). Pearson.	Defines SDLC models (Waterfall, Agile, Iterative, Spiral) for government ICT systems.
Case Study	Alias, N., et al. (2022). “ <i>Development of a Digital Document Management System for Local Government Agencies</i> ”, <i>Journal of ICT in the Public Sector</i> , Malaysia.	Real Malaysian context of implementing DMS via SDLC.
Technical Reference	IEEE Standard 1074-2006 – <i>Software Life Cycle Processes</i> .	Provides structure for quality assurance and system documentation in government ICT projects.

In parallel, ISO/IEC 27001 emphasizes the security aspect of information management by outlining controls to protect confidentiality, integrity, and availability of data. This standard is particularly relevant for public agencies handling sensitive personnel or operational records. Metadata also plays a vital role in record retrieval and classification. The Dublin Core Metadata Initiative (DCMI) offers a standardized set of elements that enhance document discoverability and interoperability across different platforms. Meanwhile, Nielsen's usability heuristics highlight the importance of designing user interfaces that are simple, consistent, and supportive of error prevention. These critical factors in ensuring system acceptance among non-technical users such as administrative staff.

In the Malaysian context, numerous efforts have been made to modernize record management in the public sector. The Malaysian Administrative Modernization and Management Planning Unit (MAMPU, 2018) reported that most government agencies still rely on manual systems, which are prone to inefficiencies and security concerns. Similarly, Cyber Security Malaysia (2021) underscored the increasing risk of data breaches in electronic record systems, recommending stronger access controls and cybersecurity awareness. The JPJ Digitalization Strategic Plan (2021–2025) further reinforces the government's commitment to digitization by encouraging departments to adopt low-cost, scalable systems that align with national digital transformation goals.

Empirical research supports these policy directions. Studies by Mustafa and Razak (2020) found that digitalization significantly improves records accessibility and workflow efficiency in Malaysian government agencies, though limited training and inconsistent IT infrastructure remain major barriers. Similarly, Rafidah et al. (2020) examined the implementation of dgDocSPACE at Majlis Perbandaran Port Dickson, revealing that digitized file management enhances productivity and accuracy but requires continuous support and maintenance to sustain success.

Drawing from these international standards and local studies, the present research contributes by introducing a low-cost, Excel-based documentation management system (e-Doc @ JPJ Perak). This system adapts global best practices in record organization, metadata tagging, and security control within a simplified, user-friendly environment. Unlike large-scale enterprise solutions, the proposed model is specifically tailored to local government operations that face financial and technical constraints. Thus, this study fills a practical gap in the literature by demonstrating how digital transformation can be achieved through incremental, resource-conscious approaches that still align with international documentation and security standards.

3. Methodology

This study adopted the practical 7-phase SDLC model, aligned with ISO/IEC 12207 and Malaysian ICT project procedures for a Document Management System (DMS) at the JPT Perak as shown in Figure 1. SDLC is a series of steps that individuals take when developing computer programs and systems (Vishal Shah, 2025), such as for developing e-Doc @ JPJ Perak. This study concentrates on the initial three phases of the seven-step SDLC framework, which include system planning, analysis, and design. These stages were implemented through a survey research and conceptual layout approach aimed at exploring the real challenges faced by staff in managing documents using the existing manual system.

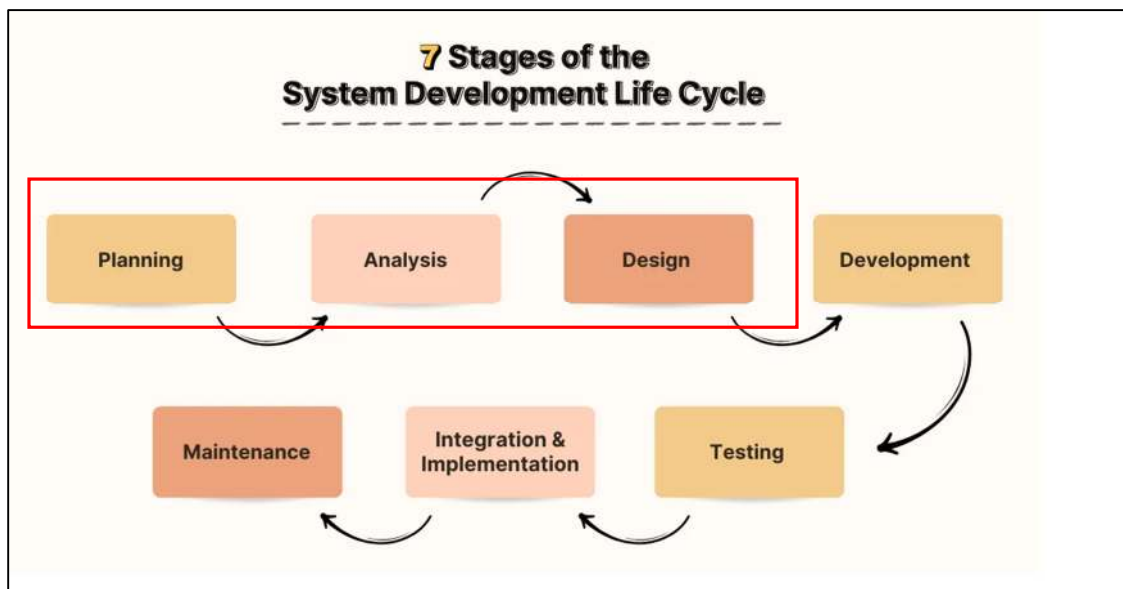


Figure 1: This study adopted the practical 7-phase SDLC model, aligned with ISO/IEC 12207 and Malaysian ICT project procedures. (Vishal Shah, 2025)

3.1 System Planning and Feasibility Study

During the planning stage, the organizational (JPJ Negeri Perak's documentation and administrative operations) needs were identified through observations and preliminary discussions with key personnel. The study revealed inefficiencies in document retrieval, duplication of records, and approval delays within the existing manual filing system. The project scope was defined to focus on digitizing document workflows and establishing a secure, accessible repository that aligned with MAMPU's Public Sector ICT Strategic Plan Guidelines. Feasibility analyses, covering technical, operational, financial, and legal aspects, confirmed that transitioning to a digital DMS was both viable and beneficial.

3.1.1 Participants (Key Personnel)

The research involved five expert respondents who were purposefully selected based on their roles and responsibilities within JPJ Negeri Perak's documentation and administrative operations. They represented the complete documentation workflow, from management to end-user level:

- i. Head of Management Division – overseeing policy and administrative coordination;
- ii. Head of IT Division – responsible for technological infrastructure and data security;
- iii. File Unit Supervisor – managing the daily filing system and record maintenance;
- iv. Administrative Assistant (File Room) – handling physical file retrieval and storage; and
- v. Administrative Assistant (End-user) – representing operational staff who depend on documentation for routine work.

This mix of participants ensured diverse perspectives on how documentation processes affect efficiency, accessibility, and data security in the department.

3.3 System Analysis

The analysis phase involved semi-structured interviews with five purposefully selected respondents representing different levels of JPJ Negeri Perak's documentation workflow: Head of Management Division, Head of IT Division, File Unit Supervisor, Administrative Assistant (File Room), and Administrative Assistant (End-user). The interviews, lasting 30–45 minutes each, provided in-depth insights into issues of efficiency, accessibility, usability, and data security. The interviews were documented through written notes and immediate post-session reflections to ensure accuracy. The data were analyzed thematically, and the findings were cross-referenced with ISO 15489 (Records Management), ISO 30301 (Management Systems for Records), and ISO/IEC 27001 (Information Security) to ensure alignment with best practices.

3.3.1 Data Collection Instrument

Data were collected through semi-structured interviews guided by a three-section questionnaire:

- i. Section A: Respondent Background – gathered demographic information such as role, unit, and years of experience.
- ii. Section B: Evaluation of the Existing System – explored users' perceptions of the current manual filing process, including issues of speed, accessibility, data integrity, and system reliability.

- iii. Section C: Proposed Improvements – captured participants' recommendations for new system features, interface preferences, and security needs.

3.5 System Design: Prototype of the Proposed System

Based on the identified requirements in system planning and analysis, the system design stage translated user feedback into a conceptual framework for the DMS. The database schema was proposed using simple platforms such as M. Words, with metadata fields for document ID, department menu, and other essential attributes. Interface mockups were developed using M.P. points to visualize user navigation and file access processes. The design emphasized user-friendly interaction, search functionality, data encryption, and secure login access. The simple outcomes of this stage are Entity Relationship Diagram (ERD), and a prototype layout as shown in Figure 2.

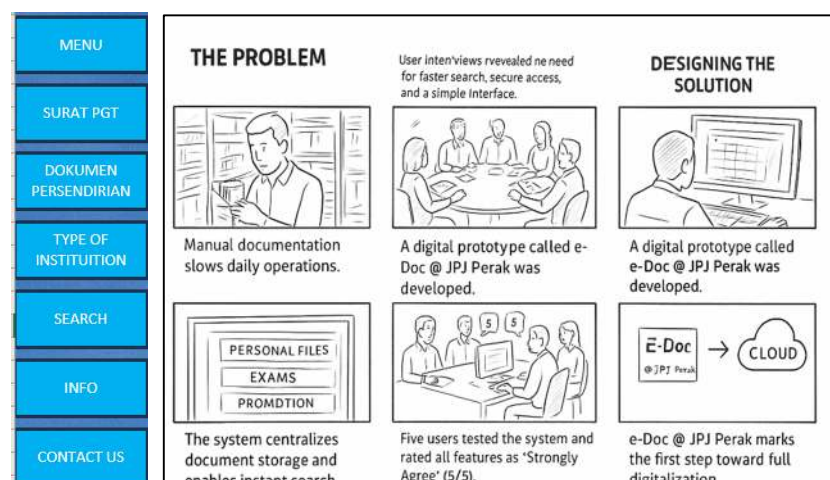


Figure 2: The proposed prototype layout of the E-Doc @ JPJ Perak system

4. Results And Discussion

4.1 Respondent Background

Five expert respondents participated in the study, representing different divisions within JPJ Negeri Perak (Table 2). Their professional experience ranged from one to over ten years of service, ensuring that the perspectives gathered reflected both operational and managerial insights. The group included the Head of Management, Head of IT, File Unit Supervisor, Administrative Assistant (File Room), and an Administrative Assistant (End-User).

Table 2: Expert Respondents Participated in The Study, Representing Different Divisions Within JPJ Negeri Perak

Respondent (JPJ Perak)	Year of working experience	Scope/skill of the job
Head of Management	6	Responsible for overall administrative coordination, policy implementation, and approval of documentation procedures.

Head of IT	12	Oversees information system infrastructure, ensures data security, and supports system integration and maintenance.
Supervisor	4	Manages record classification, file tracking, and supervision of filing room operations.
File Clerk	13	Handles daily filing, storage, retrieval, and document registration in the manual record system.
End-User	6	Uses documentation for daily operational tasks such as staff records, salary files, and correspondence.

Collectively, they covered the full spectrum of documentation activities that from record creation and storage to daily retrieval and system oversight. This diverse representation provided a comprehensive understanding of the documentation process and helped identify gaps in efficiency, accessibility, and security. The combination of managerial and technical participants ensured that the analysis captured both strategic policy perspectives and practical operational needs. This balance strengthened the reliability of the data collected and provided a clear foundation for designing a user-centered documentation management system that aligns with actual workplace conditions.

4.2 System Planning: Effectiveness of the Existing System

All respondents confirmed that the department's current documentation process is fully manual, involving the use of physical files stored in centralized file rooms. Documents are retrieved by hand, recorded manually, and re-filed at the end of each transaction. While this system has been in use for many years, it is widely recognized as inefficient and outdated.

Respondents consistently highlighted three key issues:

- i. Time-consuming retrieval process – Locating documents often takes several minutes to hours, especially during peak periods or when specific officers are unavailable.
- ii. Dependency on key staff – Only certain personnel are familiar with the filing arrangement, leading to bottlenecks when they are absent.
- iii. High risk of human error and document loss – Misfiling or misplaced records can delay operations and affect data accuracy.

The Likert-scale responses collected during the interview sessions indicated low satisfaction with the current system, particularly in the areas of accessibility, retrieval speed, and support for daily administrative tasks (Figure 3). Participants agreed that a new digital approach is essential to improve efficiency, transparency, and accountability in documentation handling.

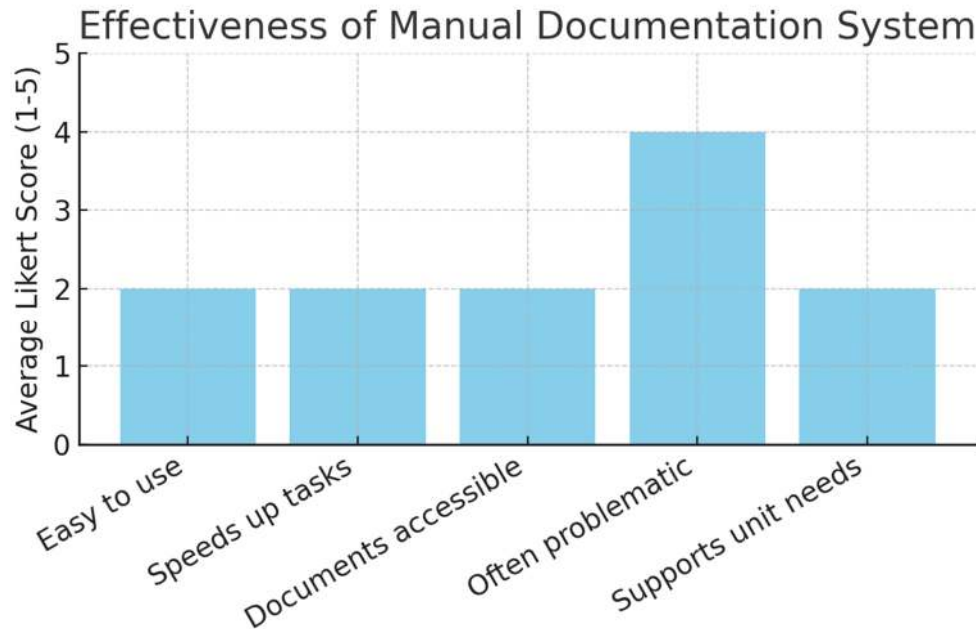


Figure 3: Evaluation of the existing documentation system of the manual approach

4.3 System Analysis: Key Weaknesses and Suggested Improvements

The thematic analysis revealed that while all respondents shared similar frustrations with the manual system, each role provided unique insights based on their daily responsibilities. Table 3 summarizes the main weaknesses and proposed improvements collected from the interview data.

The feedback collectively emphasizes the need for a user-friendly, low-cost, and secure documentation system. Respondents suggested features that promote faster access to records, digital search capabilities, and multi-user accessibility. Importantly, they highlighted the need to preserve confidentiality while reducing staff dependency and manual workload.

Table 3: The main weaknesses and proposed improvements collected from the interview data

Respondent	Weakness	Suggested Features	Proposed Menu	Other Suggestions
Head of Management	Delays, manpower required	User-friendly, low-cost, print/email, secure access	Personal files, exams, promotion	Cloud storage, focus on important docs first
Head of IT	Only authorized staff can access	Link system (like Google Drive), multi-PC access	Search, list, print	Mobile app for branches
File Unit Supervisor	System inefficient if staff absent	Search & separation by title	Salary, placement,	Remote PC access

			appointment letters	
Admin Assistant (File Room)	Workload burden, one- person dependency	Simple, lightweight system	Personal files, exams	System should not be too heavy
Admin Assistant (End-user)	Slow retrieval during peak times	Simple, searchable, print/email	Salary, personal files, exams	Remote access, basic security

4.4 System Design (Prototype of e-Doc @ JPJ Perak)

Based on the user analysis, a prototype system named e-Doc @ JPJ Perak was developed using Microsoft Excel as the core platform. The design was informed directly by the insights and requirements gathered from the interviews, ensuring strong alignment with actual user expectations. The e-Doc @ JPJ Perak functions as a centralized digital filing and retrieval system intended to replace the manual paper-based process. It allows staff to store, search, and retrieve documents efficiently without the need for physical file handling.

This system uses Excel's built-in hyperlink and filtering functions to provide fast access to categorized menus such as Personal Files, Examinations, Promotions, and Salary Documents. Each record entry includes essential metadata fields such as the document title, reference number, date, and storage location, enhancing traceability and accuracy. To ensure security, the system incorporates password protection and role-based access control, limiting file visibility to authorized personnel. This approach aligns with ISO/IEC 27001 principles on data confidentiality and protection. The design prioritizes simplicity, low maintenance, and minimal cost, making it practical for government agencies with limited budgets or technical resources.

Furthermore, the user interface was designed to be intuitive, reducing the need for extensive training. The visual layout employs colour coding and structured navigation tabs that guide users through file categories quickly. This supports Nielsen's usability principles of consistency, visibility, and ease of use. Figure 4 shows the system's secure login template, while Figure 5 displays the Microsoft Excel interface that powers the e-Doc @ JPJ Perak platform. Overall, e-Doc @ JPJ Perak demonstrates how common office software can be re-engineered to serve as a lightweight, effective documentation management system. It represents a practical step toward digital transformation in the Malaysian public sector by integrating record-management standards into an affordable, user-friendly solution.



Figure 4: Security Template Login



Figure 5: Microsoft Excel platform

4.6 Discussion

The findings of this study clearly demonstrate that the existing manual documentation system at JPJ Negeri Perak is no longer adequate to support the department's operational needs. Participants consistently described the process as slow, inefficient, and dependent on specific staff members who are familiar with the filing structure. This heavy reliance on human memory and manual retrieval not only reduces productivity but also increases the likelihood of delays and document misplacement. These

observations align with the challenges identified in earlier studies on public sector record management in Malaysia (Mustafa & Razak, 2020; MAMPU, 2018), which highlighted accessibility, data accuracy, and record retention as persistent issues.

The development of e-Doc @ JPJ Perak directly addresses these shortcomings through a practical and low-cost approach. Built on Microsoft Excel, the system leverages functions that are already familiar to most administrative staff, minimizing the need for specialized training. By integrating categorized menus, metadata fields, and hyperlink-based navigation, the system enables users to locate documents almost instantly compared to the lengthy manual process. This improvement in retrieval efficiency translates into faster decision-making, better workload distribution, and greater transparency in administrative operations.

Another notable enhancement is the system's emphasis on security and controlled access. The inclusion of password protection and role-based permissions ensures that only authorized personnel can view or modify sensitive files. This approach reflects the key principles outlined in ISO/IEC 27001 regarding information security management, particularly in maintaining confidentiality and integrity of records. The respondents unanimously agreed that the balance between security and usability in e-Doc @ JPJ Perak was appropriate for their work environment.

From a usability perspective, the design of e-Doc @ JPJ Perak also corresponds with Nielsen's usability heuristics, emphasizing simplicity, consistency, and visibility of system status. The user interface allows even non-technical staff to operate the system with minimal instruction, thereby reducing cognitive load and training time. The intuitive menu layout and color-coded sections improve navigation and help users build confidence when managing records. This finding reinforces the idea that technological transformation in the public sector does not necessarily require complex software to achieve meaningful results.

One of the strongest advantages of the system is its cost efficiency. Since it relies solely on existing software infrastructure, there is no need for additional procurement or licensing costs. This is a significant factor for departments such as JPJ Negeri Perak, where budget constraints often limit the adoption of advanced information systems. The success of e-Doc @ JPJ Perak therefore demonstrates how incremental digital transformation can be implemented even in resource-limited environments — a finding consistent with the goals of the Public Sector Digitalisation Strategic Plan (2021–2025), which promotes practical and scalable digital adoption.

Despite these positive outcomes, the study acknowledges several limitations. The current system operates effectively for small to moderate volumes of data, but scalability may become a challenge as the number of documents and users increases. Microsoft Excel is not optimized for multi-user, real-time access, and could experience performance issues if implemented on a larger scale. Furthermore, the system currently functions as a standalone application and is not yet integrated with other digital platforms such as the Document Digital Management System (DDMS) or government cloud repositories.

Nevertheless, these limitations do not undermine the contribution of the research. On the contrary, they provide a valuable roadmap for future enhancement. The findings suggest that e-Doc @ JPJ Perak can serve as a foundation system for a more comprehensive digital records platform. As technology and funding become more accessible, the prototype can be expanded into a web-based or cloud-based solution, enabling broader access, real-time updates, and centralized data management across state offices.

In conclusion, the discussion underscores that digital transformation in public agencies like JPJ Negeri Perak does not have to begin with high-cost enterprise solutions. Instead, small, well-designed initiatives like e-Doc @ JPJ Perak can deliver significant improvements in efficiency, user satisfaction, and data management reliability, serving as a model for other government departments seeking to modernize within practical resource limits.

5. Research Implications & Limitations

5.1 Research Implications

The development and evaluation of the e-Doc @ JPJ Perak system hold several important implications for both practice and theory. The research not only addresses the operational challenges of manual documentation systems in government agencies but also contributes to the broader understanding of how low-cost digital tools can drive effective digital transformation in the public sector.

5.2 Practical Implications

From a practical standpoint, this study demonstrates that digitalization in government offices does not necessarily require costly or expensive software solutions. The e-Doc @ JPJ Perak system, built using Microsoft Excel, provides evidence that existing office tools can be optimized to perform critical document management functions such as classification, retrieval, version control, and restricted access. This approach offers an immediate and cost-effective solution for departments with limited budgets, minimal technical staff, or insufficient IT infrastructure.

The system also improves efficiency and transparency in daily operations. By enabling faster searches, categorized filing, and secure access, it minimizes the dependency on specific personnel, thereby reducing bottlenecks and human error. For management, the system enhances accountability by ensuring that document trails are traceable and properly recorded. The introduction of role-based access strengthens data protection, aligning with public-sector information security standards such as ISO/IEC 27001. These outcomes support the objectives of Malaysia's Public Sector Digitalisation Strategic Plan (2021–2025) and provide a replicable model for other state agencies seeking to modernize their records management practices.

Furthermore, the study's participatory approach, engaging multiple roles including managers, IT officers, and administrative staff that demonstrates the value of co-creation in system design. The engagement process itself strengthens organizational learning and fosters acceptance among end-users, increasing the likelihood of long-term adoption.

5.3 Theoretical Implications

Theoretically, this study extends the literature on records management and digital transformation by showcasing how international standards such as ISO 15489, ISO 30301, and DCMI can be contextualized to local government environments. It contributes to the body of knowledge on low-resource digital innovation, highlighting how incremental, bottom-up approaches can still align with recognized information governance frameworks.

Moreover, the findings reinforce the importance of usability and user-centered design principles in documentation systems, echoing Nielsen's heuristics on simplicity, visibility, and error prevention. The success of e-Doc @ JPJ Perak suggests that usability is not just a technical matter but a determinant of system sustainability and acceptance.

In summary, the implications of this study reach beyond JPJ Negeri Perak. They illustrate how Malaysian public agencies—and potentially other developing countries—can adopt affordable, practical, and secure documentation systems that meet both operational needs and policy expectations. The results encourage further research into scaling such systems into integrated, cloud-based platforms that maintain the same principles of accessibility, cost-efficiency, and user engagement.

5.4 Research Limitations

This study has several limitations that should be acknowledged to provide context for the findings and guide future research. The research involved only five participants from JPJ Negeri Perak, representing management, IT, file supervision, and administrative roles. While this small group provided rich, detailed insights through qualitative interviews, it limits the generalizability of the results to other departments, states, or government agencies. The focus on a single organization means that variations in documentation practices, infrastructure readiness, and digital policies across different state offices were not captured in this study.

Another limitation relates to the scope and duration of the system planning and testing phase. The evaluation of e-Doc @ JPJ Perak, developed using Microsoft Excel, was conducted over a short-term implementation period involving only internal users. Although the findings demonstrated strong user satisfaction and system usability, the assessment did not include long-term factors such as system performance, data scalability, or maintenance challenges. Additionally, potential issues related to multi-user data access, file version conflicts, and cloud synchronization were outside the study's parameters. These aspects are particularly relevant if the system is to be expanded or integrated into a larger digital ecosystem.

The study's technical scope was also intentionally limited to ensure feasibility within the department's available resources. While Excel provided a cost-effective and accessible foundation for digital record management, the platform has inherent limitations in handling very large datasets, concurrent access, and automated workflows. Consequently, the results primarily demonstrate the feasibility of small-scale digital transformation rather than comprehensive enterprise integration.

Despite these limitations, the study's findings are valuable in several ways. They provide practical insights for other Malaysian government departments facing similar constraints, offering a replicable model for early-stage digitalization. Furthermore, the participatory approach—engaging multiple staff roles—adds credibility to the results and highlights how inclusive design can enhance user adoption.

Future research should aim to expand the participant base, covering multiple states or federal-level agencies, and conduct longitudinal evaluations to examine how systems like e-Doc @ JPJ Perak perform over time. Comparative studies with cloud-based or enterprise document management systems could also reveal scalability benefits and challenges. Addressing these areas would deepen understanding of sustainable digital transformation strategies within the Malaysian public sector as suggested by previous experts in applying digital platform for developing DMS ((Mushayabasa & Ngulube, 2025; Ivanova, 2024; Jordana et al, 2022).

6. Conclusion

This study investigated and addressed document management challenges at JPJ Negeri Perak, a government agency still dependent on physical filing systems. Through expert interviews, key issues such as inefficiency, time delays, dependence on individual staff, and difficulties in file retrieval were identified. These challenges commonly found across Malaysia's public sector due to uneven digital transformation. To overcome these problems, a prototype system named e-Doc @ JPJ Perak was developed using Microsoft Excel as a low-cost, practical, and accessible platform. SDLC-based Designed based on user feedback from various administrative levels, the system introduced categorized storage, secure access, and metadata tagging for improved traceability and version control. The feedback showed the system to be highly effective in enhancing efficiency, accessibility, security, and usability. Importantly, it aligned with international standards such as ISO 15489 and ISO/IEC 27001, ensuring compliance with best practices while supporting Malaysia's Public Sector Digitalisation Strategic Plan (2021–2025). The study offers three main contributions. First, it proves that effective digitalization does not necessarily require complex or expensive software; existing office applications can be optimized for departmental needs. Second, the e-Doc design provides a replicable, scalable model for other local agencies transitioning from manual to digital records. Third, the participatory approach involving multiple user levels fostered acceptance and system trust. However, limitations include its small-scale testing and reliance on Excel, which may face challenges with scalability and multi-user integration. Future research should explore a cloud-based or web-based system for broader institutional application by applying the system development and testing in the SDLC model. Overall, the study demonstrates that practical, low-cost & user-driven innovation can significantly improve documentation efficiency and serve as a foundation for sustainable digital transformation in Malaysia's public sector.

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