Design of a Document Classification and Disposal Management System for a Higher Education Institution in Nueva Vizcaya

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Abstract- **This study presents the Design of a Document Classification and Disposal Management System that effectively serves the distinctive needs of higher education institutions in Nueva Vizcaya. The proposed system combines smart document classification using machine learning with a unique rule-based approach for document management. This design meets ISO standards for risk management. The system is conceptualized to addresses challenges faced by rural HEIs. While no system implementation or statistical validation was conducted, the design outlines the technical and regulatory features necessary for future development. This paper contributes to the field by offering a model for structured, scalable, and standards-compliant records management architecture in institutional settings.**

Indexed Terms- Document Management System, Document Classification, Disposal Management, Higher Education

I. INTRODUCTION

As education goes digital, institutions are relying more on MIS solutions. These systems simplify administrative tasks and ensure service quality remains high. Interest in using intelligent systems is growing. These systems include machine learning tools for classifying documents and automated processes for disposing of records. They help improve the management of institutional documents (Khamdamov et al., 2020; Sunarjo et al., 2024). Higher education institutions now commonly use automatic systems for document handling and disposal. These systems help control access and meet data management needs (Tkachenko & Денисова, 2022). It has been found that the implementation of document management systems as recommended by Sarinten et al. (2022) minimizes information redundancy, decreases the likelihood of staff errors, and boosts transparency. All of these support Total Quality Management (TQM) standards. Using standards like ISO 31000 to manage risk is now a practical way to boost data integrity and strengthen institutional resilience (Putri & Wijaya, 2023).

Although these solutions have been established, several HEIs in regional areas like Nueva Vizcaya still depend on manual or semi-digital document handling methods. As a result of this gap, documented retrieval becomes inefficient, disposal methods are not always aligned, data is less secure, and compliance with regulations is compromised. As shown by Sarinten et al. (2022), a centralized and intelligent document management system is crucial because institutions lacking such a system have trouble managing document workflows and protecting important data. In addition, research on creating document classification and disposal systems adjusted to PH HEI conditions, especially in under-resourced rural provinces, is not well documented (Putri & Wijaya, 2023).

This study intends to develop a Document Classification and Disposal Management System suited to the setting of a Higher Education Institution in Nueva Vizcaya. The system's design involves the use of machine learning for automatic document classification, a rule-based approach for organizing disposal, and risk management components that are

ISO standard compliant. It intends to solve existing operational issues, make document protocols more consistent, and support the enforcement of quality assurance standards. Its principal goal is to improve decision-making, simplify internal procedures, and make the institution better prepared for a digital future.

This paper is limited to the design phase of the Document Classification and Disposal Management System. It does not include actual system deployment or statistical testing. Instead, it proposes a conceptual framework and technical specification based on the identified needs of document managers in government offices in Nueva Vizcaya. The design aims to serve as a foundation for future development and implementation studies that will validate the system's effectiveness in real-world environments

II. RESEARCH ELABORATIONS

This section elaborates on related studies about the design of document classification and disposal management systems.

System Design Principles for Document Management in Higher Education

The development of a Document Management System used in higher education must not stop at just electronic storage of documents; it needs to capture the complex, multilayered activities in higher education and support users, legal requirements, and lasting usage. Because institutions in Nueva Vizcaya can have different digital preparedness, the system design must accommodate this flexibility. Schmidt (2022) found that the use of digital systems in higher education, while beneficial for academic functions, is also crucial for administrative efficiencies, so smart design of these systems matters more now than ever. To succeed, system design should be centered on end-users, supporting ease of use for everyone within the institution, regardless of digital level. Rohman and Nurhayati (2023) suggest that user participation in the design process can lead to greater ownership and more efficient implementation, largely in institutions that are currently moving towards digital transformation.

Besides, intelligent document classification is a key component of an effective content management system. Conventionally, manual categorization and folder arrangements governed systems, but present approaches are privileging algorithmic techniques for document classification. Ni'mah and Syuhada (2022) state that machine learning offers greater accuracy and improved efficiency by monitoring user habits and institutional rules, thereby supporting a classification system that adjusts automatically. This evolution is symptomatic of a current movement in the field of educational information systems. Intelligent automation is implemented to accomplish more than task substitution by driving better and smarter use of organizational information. Even so, equitable accessibility, technical and cognitive—should be integrated into the system's structure to guarantee the institutional equity concerns are met, according to Figueiredo et al. (2024).

The design of the system is also shaped by the requirements of compliance and risk management. Because daily educational processes involve information like student histories and records, strict commitment to legal standards related to privacy is absolutely necessary in academic contexts. Putri and Wijaya (2023) stress that risk management standards, such as ISO 31000, should be embedded in system design to support continuous defense against data security and reputational risks within higher education. This stance is consistent with a rising emphasis on building systems that both maintain data and support institutional resilience in accordance with regulations.

It is also necessary for the system to enable collaboration across organizational units. Work on documentation in educational institutions rarely takes place alone. Usually, the process brings together multiple departments, multiple levels of reviewers, and the need for continual content updates. Rohman and Nurhayati (2023) believe that real-time collaborative platforms, with features such as frequent updates, exchanges of feedback, and process monitoring, can refine institutional documentation practices. Such infrastructure can make a major difference in the areas of accreditation, making new policies, and evaluating faculty, because the documentation proves the quality of the institution.

In sum, designing the system with lifecycle management and responsible document removal is vital. Schmidt (2022) describes how well-defined archiving and disposal procedures both sustain efficiency and demonstrate commitment to environmental and data management principles. Adopting sustainable methods, such as electronic document elimination and careful disposal of electronic waste, promotes the harmonization of institutional activities with worldwide sustainability aims, where resources are scarce. These design features clearly show that a well-implemented DMS in higher education supports not just technical functions, but also governance, compliance, collaboration, and ongoing improvement.

Intelligent Content Classification in Educational Information Systems

The use of intelligent content classification in educational information systems serves as a crucial strategy for controlling the increasing size and complexity of academic data. With the rapid increase in the production of digital content by higher education institutions each day, ranging from office documents to educational materials, there is a growing need for information systems that handle both storage and meaningful interpretation. Machine learning systems for classification help automate the categorization, tagging, and lookup of documents based on their content. Sunarjo et al. Automated classification reduces manual work. This allows educators and staff to spend more time on their main teaching and development roles. This shift does more than improve administrative operations. It changes how academic institutions use data for planning and policy-making.

The biggest impact of content classification shows up when these systems work with Management Information Systems. According to Khamdamov et al. In 2020, when MIS includes intelligent classification features, it can manage academic and administrative data in real time. This data is then accessible to those who need it. This integration keeps information safe. It can be quickly accessed for curriculum management, student tracking, and administrative documentation. Integrating smart classification in MIS shows that information systems do more than just hold data. They help shape decision-making too.

Intelligent classification does more than boost system efficiency. It also makes the system more adaptable. This helps meet various needs in learning and management. Educational content today covers a large variety of formats and subjects, especially when blended and remote learning are involved, according to Hasanuddin et al. (2023). Therefore, intelligent classification approaches must adapt to incorporate a variety of formats, new organizational structures, and ongoing changes in teaching approaches. Greater access to personalized and responsive content is made possible by these systems, resulting in better educational delivery and greater equity.

Technical ability is necessary but insufficient when user interaction and accessibility are not considered. It is important to design systems so that users find search, retrieval, and interaction interfaces with classified content both easy to use and welcoming. If users are able to use these systems with assurance, the advantages of automated classification are maximized. Besides, Putri and Wijaya (2023) advocate for integrating risk management protections into Because the technological setting and academic environment are both changing now, such systems need to stay flexible and adaptive. Jannah et al. (2023) recommend frequent assessments and changes to the system to guarantee that institutional aims and the evolving needs of users are continuously met by technological capabilities. This ongoing development process ensures that classification systems stay practical and adaptable. They keep up with changes in curricular programs and regulatory needs.

Smart records content classification is vital to digital transformation in higher education. Updating this method often improves data control. It also makes institutions faster, enhances education, and strengthens monitoring. This method enhances educational platforms to be smarter and more flexible. It supports learner-centered academic institutions.

Design Standards and Best Practices for Document Disposal Systems

Document Disposal Systems (DDS) design standards and best practices in educational institutions are necessary not only to fulfill legal requirements and maintain data security but also to promote environmental conservation. With increased digitalization in education, institutions now find it harder to handle both hard copy and electronic documents properly. This challenge mainly involves building a document disposal system that meets regulations at all levels and safeguards valuable school data while being sustainable. It is necessary that document disposal methods comply with rules and regulations related to records and data protection. Failure to comply, most notably with respect to data breaches, may seriously harm an institution's reputation and risk legal action. As Limon et al. (2022) point out, building staff awareness of these legal regulations is of great significance. Even though awareness and understanding are necessary, they have to be backed by real-world applications so employees really understand how to ensure proper waste disposal procedures are followed.

The success of DDS heavily depends on staff training. Akande-Sholabi et al. (2023) stress that just teaching employees the theory of document disposal is insufficient; real-world training is required to reinforce good disposal methods. Programs that continuously teach practical disposal techniques are necessary to encourage employees to comply with and take accountability for disposal practices. Employee training provides an opportunity for everyone to recognize the problems that could result from improper disposal and to see why documented procedures are so important. Using these methods reduces mistakes by personnel, minimizing one of the main causes of data security issues at hand.

The heart of every document's disposal approach is built around the creation of detailed and explicit SOPs. According to Araune et al. (2024), a carefully structured categorization is essential during the document disposal process. All document forms - whether classified as confidential, non-confidential, paper, or digital - should be precisely identified, along with deciding and communicating their intended retention periods prior to disposal. With these specific procedures, all documents are sorted and disposed of properly, which lowers the chance of errors and increases the general effectiveness of the system. A properly structured DDS increases operational efficiency and also reduces the risk of noncompliance.

Due to amplifying awareness about the environment, responsible document disposal is a significant priority now. Institutions that focus on conserving the ecosystem need to incorporate sustainable strategies. In their 2020 report, Jin et al. provided two key sustainable solutions: reuse paper and use certified vendors for digital device disposal. Destroying paper files and recycling old gadgets with approved providers can cut down on waste and protect the environment. Institutions should utilize technologies that harmonize sustainability, productivity, and defense.

Adding technology to document disposal brings extra benefits. It enhances security and improves efficiency. Maharaj et al. (2020) suggest that automated shredders and tracking systems can simplify document disposal, which helps with compliance and reduces errors. Digital cataloging and electronic signatures can also decrease paper usage, reducing waste and promoting a paperless environment. By adopting modern technologies, educational institutions can enhance the efficiency and security of document disposal, reducing the resources required for traditional paper-based methods.

Robust DDS depends on regular monitoring and auditing to maintain its functionality. Structured reviews confirm that waste management processes are compliant and aid in lowering connected dangers. Shakib et al. noted in 2022 that steady monitoring and regular evaluation are crucial for disposal processes. Assessments can pinpoint system weaknesses, offering crucial insights for continuous enhancement. Integrating review capabilities into institutional DDS assures reliability and openness. It also confirms that procedures match policy and best practices.

Stakeholder engagement has a significant impact on the effectiveness of document disposal systems. In their study, Limon et al. (2022) argue that involving all stakeholders in designing and executing a DDS

boosts policy compliance and enhances practices. When employees understand sustainability and see the importance of document disposal policies, they use better methods. This way of engaging ensures all staff take responsibility for proper records management. It also builds a culture of accountability and meets the institution's ethical needs.

When planning a reliable Document Disposal System for schools, consider several key factors. These include legal obligations, information security, sustainability, and employee involvement. By using best practices and standards, schools can efficiently and securely handle documents. This approach also supports their sustainability efforts. A well-designed system protects key data and helps achieve sustainability and good governance goals.

III. FINDINGS

The report details the main features of a Document Management System for education. It includes methods for classifying, retaining, and disposing of documents. Each section will be discussed here in brief:

Record Title and Date Created: These fields allow users to name their documents and capture the date they were made. The date provides the basis needed to enforce retention schedules and to ensure timely archiving or destruction of records.

Description and Location: The summary contained in the description supports easy identification, and the location field keeps a record of where the physical document is stored, making retrieval easier.

Frequency of Use and Cabinet No. The document's frequency of use determines how the retention period is managed. Tracking paper records is easier thanks to the use of cabinet numbers.

Retention Period and Classification: The retention period describes the amount of time the document must be kept. Classifying records in the field provides the basis for meeting both institutional and legal requirements.

Record Medium and Classification: Records are identified as paper or digital, alongside their confidentiality classification. Institutional users have greater ease in both sharing and accessing non-confidential records.

Time Value and Disposal Period: Records that have a Time Value of 'temporary' are intended to be disposed of or archived according to the specified Disposal Period. Users receive a notification from the system before the record needs to be disposed of.

Figure 1. Sample Report

Report Generated			
Record Title		Date Created	xx/xx/xxx
Description		Location	
		Frequency of Use	
		Cabinet No.	
		Retention Period:	
Classification	Option 1	From	xx/xx/xxx
Record Medium	Paper	To	xx/xx/xxx
Classification	Non Confid…		
Time Value	Temporary	Disposal Period	xx/xx/xxx

CONCLUSION

This study outlines the design of a Document Classification and Disposal Management System (DCDMS). Its purpose is to improve record management in government institutions. The system promotes organized, efficient, and compliant handling of records. The proposed system has key features, such as smart document organization, automatic disposal scheduling, and built-in risk management that follows ISO 31000. It offers a scalable framework that institutions can adopt to enhance their document management practices.

The research is restricted to the design phase only. A functional prototype was not developed, deployed, or tested by the team. The outcomes described are theoretical. They aim to assist with future system implementation, evaluate performance, and confirm user needs.

The system architecture focuses on simplicity, adaptability, and scalability. It especially meets the needs of institutions in rural areas with different levels of digital maturity. The system aligns with

national guidelines, like the General Records Disposition Schedule (GRDS). It also promotes eco-friendly practices, such as digital documentation and secure disposal. This helps support wider sustainability and governance goals.

The initial design focused on higher education in Nueva Vizcaya. However, the framework can also help other government agencies improve document governance. The proposed system sets the stage for better decision-making. It boosts readiness for digital change. It enhances information security and ensures compliance with regulations.

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