



**ISSUES IN PROCESSING TIME AND ERROR RATES IN DATA ENTRY: BASIS FOR
ENHANCED RECORDS MANAGEMENT AT DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES – COMMUNITY ENVIRONMENT AND NATURAL
RESOURCES OFFICE (DENR-CENRO) CALANASAN**

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Abstract

Efficient records management is essential in ensuring transparency, accountability, and effective public service delivery in government institutions. However, many public offices continue to experience delays and inaccuracies in data entry, affecting the reliability and efficiency of records management systems. This study assessed the issues in processing time and error rates in data entry as a basis for enhanced records management in the Community Environment and Natural Resources Office. Specifically, it determined the respondents' level of agreement regarding processing time and error rates, identified the factors affecting data entry efficiency, examined the issues encountered in records management, and proposed strategies for improvement. The study employed a quantitative research approach using a descriptive research design. The respondents consisted of twenty-five (25) participants composed of fifteen (15) clients and ten (10) co-employees of DENR-CENRO Calanasan. Data were gathered through a researcher-made questionnaire and analyzed using frequency count, percentage, weighted mean, and ranking. Findings revealed that respondents generally perceived the current data entry system as efficient and capable of supporting records processing and office transactions. However, occasional errors and processing delays were still observed. The study identified user-friendly systems, complexity of procedures, insufficient training, lack of clear guidelines, and handling large volumes of data as the primary factors affecting processing time and error rates.

Keywords: *records management, processing time, error rates, data entry efficiency, public service delivery, DENR-CENRO Calanasan, data accuracy, records processing*

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Introduction

The growing demand for efficient and transparent public service has emphasized the importance of records management in government institutions. Records management involves the systematic creation, organization, maintenance, storage, retrieval, and disposal of official records to ensure information accessibility, reliability, and accountability (University of the Philippines, 2019). In government offices, records serve as vital evidence of transactions, decisions, and policy implementation; thus, efficient records management is necessary for organizational effectiveness and quality public service delivery. Poor records management practices may result in delays in processing transactions, loss of important information, reduced operational efficiency, and weakened public trust (Ngoepe, 2017).

Data entry is a fundamental component of records management because it ensures that information is accurately encoded, processed, updated, and stored within organizational systems. Efficient data entry contributes to timely transaction processing, accurate reporting, and reliable information retrieval. However, many government offices continue to encounter challenges associated with prolonged processing time and high error rates in data entry, especially in offices utilizing manual or semi-digital systems (Asogwa, 2012). These inefficiencies often lead to duplication of records, incomplete information, delayed services, and inaccuracies in organizational reports, thereby affecting administrative performance and decision-making processes.

Processing delays and data inaccuracies are recognized as significant operational concerns in public institutions. Processing time refers to the duration required to complete data entry and records-related transactions, while error rates pertain to the frequency of inaccuracies committed during data encoding and management. Several factors contribute to these issues, including excessive workload, inadequate staffing, outdated equipment, poor technological integration, insufficient employee training, and lack of standardized procedures (Chikozho & Lwanga, 2024). Human errors in data entry may compromise the integrity, reliability, and accessibility of official records, which can negatively affect the delivery of government services and institutional accountability.

Effective records management is also considered an important element of good governance and organizational efficiency. Studies have shown that accurate and accessible records improve transparency, strengthen decision-making, and enhance operational productivity within government agencies (Kemoni & Ngulube, 2008). Furthermore, electronic and well-organized records systems can reduce processing delays, minimize human errors, and improve workflow management (Kwarteng, 2021). Despite



advancements in digital information systems, many local government offices and public institutions still face difficulties in maintaining efficient and error-free records management operations due to limited technological resources and administrative constraints.

Within the Department of Environment and Natural Resources, records management is highly important because the agency handles environmentally sensitive, legal, and administrative documents related to land management, forestry, permits, environmental compliance, and natural resource conservation. At the Community Environment and Natural Resources Office, records play a critical role in supporting environmental governance and ensuring the effective implementation of environmental laws and programs. The office processes numerous reports, applications, certifications, and monitoring documents that require timely and accurate data entry. Delays and inaccuracies in encoding records may hinder operational efficiency, affect document retrieval, and compromise the quality of public service delivery.

Although numerous studies have discussed records management and administrative efficiency in government institutions, limited research has specifically examined the issues concerning processing time and error rates in data entry within local environmental offices such as DENR-CENRO Calanasan. Existing studies commonly focus on broader aspects of records management systems, digital transformation, and organizational transparency, while little attention has been given to operational challenges experienced by frontline environmental offices in rural settings (Shepherd & Yeo, 2003). Moreover, there is insufficient localized research investigating how delays and inaccuracies in data entry directly affect records management efficiency and service delivery within DENR-CENRO offices. This gap in literature highlights the need for a focused study that will assess the operational issues affecting data entry and records management in DENR-CENRO Calanasan.

Hence, this study aims to assess the issues in processing time and error rates in data entry at DENR-CENRO Calanasan as a basis for enhanced records management. The findings of the study may contribute to improving data accuracy, reducing operational delays, and strengthening records management practices to support more efficient public service delivery.

Statement of the Problem

This study aimed to assess the issues on processing time and error rates in data entry as basis for enhanced records management in DENR-CENRO Calanasan.

Specifically, it sought to answer the following questions:



1. What is the respondents' level of agreement on the processing time and error rates in data entry in DENR-CENRO Calanasan?
2. What are the factors affecting the processing time and error rates in data entry in DENR-CENRO Calanasan?
3. What issues are encountered in processing time and error rates in data entry in records management?
4. What strategies may be proposed to enhance records management in DENR-CENRO Calanasan?
5. what are the inputs to enhance records management of CENRO Calanasan?

Theoretical Framework

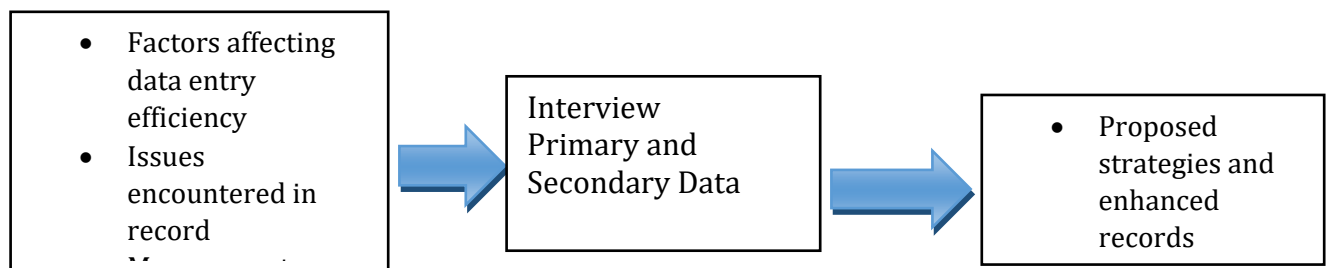


Figure 1. A paradigm showing the dependent and independent variables of the study

Figure 1 presents the theoretical framework of the study, showing the flow of the independent variables, process, and expected output. The framework illustrates that the study focuses on the factors affecting data entry efficiency and the issues encountered in records management as the primary concerns being examined. These variables influence the effectiveness of records management practices in DENR-CENRO Calanasan. According to Shepherd and Yeo (2003), effective records management depends on accurate data processing, proper information handling, and systematic organizational procedures to ensure operational efficiency and accountability.

The framework further shows that data were gathered through interviews and the use of primary and secondary data sources to obtain relevant information regarding processing time, error rates, and records management practices within the office. Through the analysis and evaluation of the gathered data, the study aims to identify appropriate solutions and interventions to address the existing issues.



RESEARCH METHODOLOGY

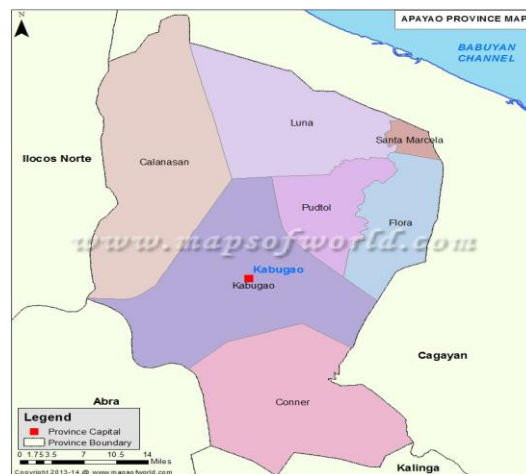
In this Chapter, the research methodology employed to rigorously investigate the processing time, error rates, user perceptions, and satisfaction related to data entry practices within DENR CENRO Calanasan records is unveiled. This chapter outlines the research design, sampling techniques, data collection methods, and analytical tools utilized to garner comprehensive insights into the intricate dynamics of data management.

Research Design

This study utilized a descriptive research design to assess the issues in processing time and error rates in data entry as a basis for enhanced records management in the Community Environment and Natural Resources Office. This design was used to describe and analyze the current conditions, practices, and challenges related to data entry and records management. The respondents consisted of twenty-five (25) participants, composed of 15 clients and 10 co-employees of DENR-CENRO Calanasan. Clients provided insights regarding processing time and service efficiency, while co-employees shared information on data entry practices and records management issues.

Locale of the Study

The study was conducted within the premises of the Community Environment and Natural Resources Office (CENRO) Calanasan, a unit under the Department of Environment and Natural Resources (DENR) in the Philippines. CENRO Calanasan is situated in the municipality of Calanasan, province of Apayao, Cordillera Administrative Region.



Source: Maps of the World Figure 2. Calanasan, Apayao



Respondents of the Study

The respondents of the study consisted of twenty-five (25) participants from the Community Environment and Natural Resources Office. These were composed of fifteen (15) clients and ten (10) co-employees. The fifteen (15) clients were selected to provide insights regarding the efficiency of service delivery, particularly on processing time, responsiveness, and accuracy of records handling during transactions in the office. Their responses helped determine how data entry practices affect client service and transaction processing.

Meanwhile, the ten (10) co-employees were composed of personnel directly involved in data entry, records management, and office transactions. They were selected because of their knowledge and experience regarding the procedures, challenges, and operational issues encountered in processing records and managing data within the office.

The respondents were chosen because they could provide relevant information necessary in assessing the issues on processing time and error rates in data entry as basis for enhanced records management in DENR-CENRO Calanasan.

Research Approach and Design

This study employed a quantitative research approach using a descriptive research design to assess the issues in processing time and error rates in data entry as a basis for enhanced records management in the Community Environment and Natural Resources Office.

The quantitative approach was utilized because the study gathered numerical data from the respondents through survey questionnaires to measure their level of agreement regarding processing time, error rates, and factors affecting data entry efficiency. This approach allowed the researchers to analyze and interpret the responses objectively using statistical tools.

Meanwhile, the descriptive research design was used to describe the existing conditions, practices, and issues related to data entry and records management in DENR-CENRO Calanasan. It enabled the researchers to identify the common challenges encountered in processing records and determine possible strategies for improving records management practices within the office.

Table 1: DENR CENR, PENR, AND REGIONAL OFFICES LAND



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External Services

External Services	Function and Responsibilities	Office Division or	Classification
1. CITIZEN'S CHARTER NO. RO-L-01. ISSUANCE OF CERTIFICATION OF LAND CLASSIFICATION STATUS*	This Certification is being issued based on the land records/status and projection in the land classification map for alienability or disposability of the land being applied for. This Certification does not construe ownership and is for reference only.	Regulation and Permitting Section, DENR Implementing PENR/CENR Office	Highly Technical **
2. CITIZEN'S CHARTER NO. RO-L-02. ISSUANCE OF SURVEY AUTHORITY	This document is an authority given to private Geodetic Engineers (GEs) for the survey of public lands for land titling.	Regulation and Permitting Section, DENR Implementing PENRO, CENRO	Highly Technical
3. CITIZEN'S CHARTER NO. RO-L-03. APPLICATION FOR FREE PATENT (AGRICULTURAL)*	Free Patent Application is a mode of acquiring ownership of a certain parcel of alienable and disposable land.	Regulation and Permitting Section, DENR CENRO to PENRO	Highly Technical (Multi-Stage Processing)
4. CITIZEN'S CHARTER NO. RO-L-04. APPLICATION FOR FREE PATENT (RESIDENTIAL)	Free Patent Application is a mode of acquiring ownership of a certain parcel of alienable and disposable land.	Regulation and Permitting Section, DENR CENRO to PENRO	Highly Technical (Multi-Stage Processing)

Source: DENR Citizens charter (2025 1st Edition)

The table presents the land-related external services offered by the DENR under its Citizen's Charter. These services include the issuance of land classification certifications, survey authority, and applications for free patents for agricultural and residential lands. The services help determine land status, authorize land surveys, and provide qualified applicants the opportunity to obtain legal ownership of alienable and disposable lands.

These processes are classified as highly technical because they require document verification, land evaluation, technical review, and multi-stage processing. The services are



implemented by the Regulation and Permitting Section through the CENRO and PENRO offices to ensure proper land administration and legal compliance.

Figure 2: General Service Flows of DENR CENR, PENR, and regional offices

External Services

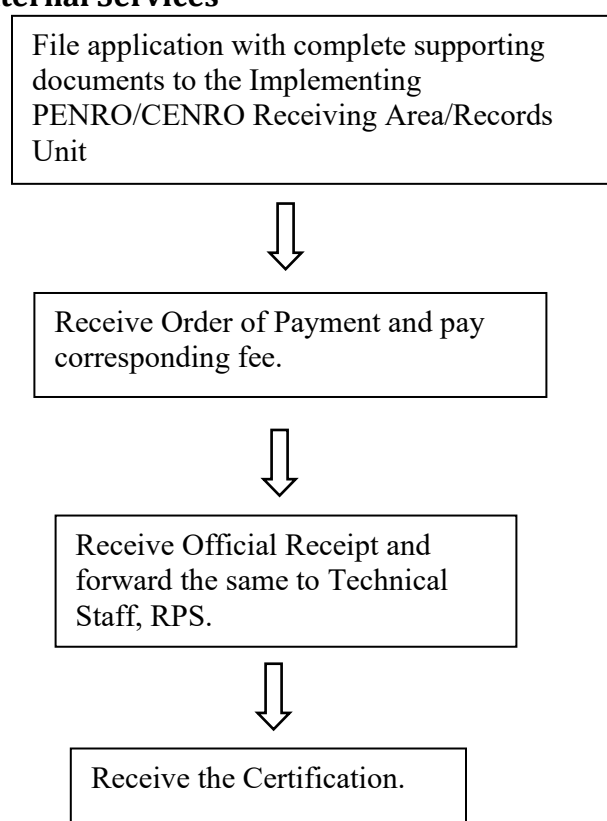


Figure 2: illustrates the general service flow followed by clients when applying for land-related external services in the DENR through the CENRO, PENRO, and Regional Offices. The process ensures systematic handling of applications, proper documentation, and efficient delivery of public services.

The process begins when the applicant submits a complete set of supporting documents to the Receiving Area or Records Unit of the implementing PENRO or CENRO office. These documents are checked and recorded to verify that the application complies with the required standards and documentary requirements.



After the initial evaluation, the applicant is issued an Order of Payment indicating the corresponding fees that need to be paid. The applicant then proceeds to the authorized payment section to settle the required charges associated with the requested service.

Once payment has been completed, the applicant receives the Official Receipt as proof of payment. The receipt and application documents are then forwarded to the Technical Staff or Regulation and Permitting Section (RPS) for further technical evaluation, verification, and processing.

Finally, after the technical assessment and approval process are completed, the applicant receives the requested certification or document from the DENR office. This flow demonstrates the organized procedure implemented by the DENR to ensure accountability, transparency, and efficient public service delivery in land-related transactions.

Within the external services of the CENRO-Calanasan, the study sought to evaluate factors that affects the recording of the client and employees based on their perceived behavior and experience of all the services. This will generate information the areas that induce double entry of the data in the records of the offices and may affect the credibility and quality of data input.

Data Gathering Procedure

Research Instrument

The primary research instrument used in this study was a researcher-made questionnaire designed to gather data regarding the issues in processing time and error rates in data entry as a basis for enhanced records management in the Community Environment and Natural Resources Office.

The questionnaire was divided into sections corresponding to the objectives of the study. The first part gathered information on the respondents' assessment of processing time and error rates in data entry. The second part identified the factors affecting data entry efficiency, while the third part focused on the issues encountered in records management. The final section solicited suggestions and strategies for enhancing records management practices in DENR-CENRO Calanasan.

The instrument utilized a Likert scale to determine the respondents' level of agreement on the statements provided. The questionnaire was validated by the research adviser and subject experts to ensure the clarity, relevance, and reliability of the items.



Necessary revisions were made based on their recommendations before the actual administration of the instrument.

Data Analysis

The data gathered in this study were collected, organized, tabulated, and interpreted using descriptive statistical tools. Frequency count and percentage were utilized to determine the distribution of responses and identify the common issues encountered in processing time and error rates in data entry. Weighted mean was used to measure the respondents' level of agreement regarding data entry efficiency, processing time, and records management practices based on the 5-point Likert Scale. Ranking was likewise employed to determine the most significant factors affecting processing time and error rates in data entry. These statistical tools enabled the researchers to objectively analyze and interpret the data gathered from the respondents and to formulate appropriate strategies for enhanced records management in DENR-CENRO Calanasan.

RESULTS AND DISCUSSION

Table 2: Perception of Processing Time and Error Rates

Statement	Mean	Interpretation
Data entry task are completed within a reasonable amount of time	3.92	agree
Current data entry process is efficient	3.96	agree
Data entry activities are time consuming	3.52	agree
Errors frequently occur during data entry	3.16	agree
Occurrence of data entry error is minimal	3.88	agree
Data entry process is smooth and hassle-free	3.92	agree

Table 2 presents the respondents' perception of processing time and error rates in data entry. Based on the results, the statement "Current data entry process is efficient" obtained the highest mean of 3.96, interpreted as "agree." This indicates that the



respondents generally perceive the existing data entry procedures in the Community Environment and Natural Resources Office as effective and capable of supporting office transactions and records processing. Similarly, the statements “Data entry tasks are completed within a reasonable amount of time” and “Data entry process is smooth and hassle-free” both obtained a mean of 3.92, also interpreted as “agree,” suggesting that respondents are satisfied with the timeliness and flow of the current data entry operations. These findings support the study of Lindgren et al. (2019), which emphasized that organized digital processes and efficient public service systems contribute to improved operational efficiency and better service delivery in government institutions. Likewise, Santa et al. (2019) stated that effective government information systems enhance operational effectiveness and user satisfaction through improved workflow and service reliability.

However, the statement “Errors frequently occur during data entry” obtained the lowest mean of 3.16, although still interpreted as “agree.” This implies that despite the perceived efficiency of the system, respondents still experience occasional inaccuracies and mistakes during data entry processes. Such errors may affect the accuracy, reliability, and retrieval of records if not properly addressed. Garza et al. (2023) emphasized that data processing errors negatively affect organizational efficiency, information reliability, and the overall quality of records management systems. Similarly, Alotaibi et al. (2024) stressed that minimizing data entry errors through effective monitoring systems and employee competency development is essential in maintaining accurate and reliable information management.

The findings imply that while the current data entry system of DENR-CENRO Calanasan is generally functional and efficient, there is still a need to strengthen records management practices to minimize errors and improve data accuracy. Enhancing employee training, standardizing procedures, and improving monitoring mechanisms may help ensure more accurate, reliable, and efficient records management within the office. According to Matheus et al. (2021), effective digital transparency and standardized records management procedures improve organizational accountability and operational efficiency in government institutions.

Table 3: Factors Affecting Processing Time and Errors

Statement	Factors	Rank
The complexity of data entry system	23	2
Insufficient Training	18	3.5



Lack of Clear guideline	18	3.5
Handling large volumes of data	15	5
User-friendly systems	24	1

Table 3 presents the factors affecting processing time and errors in data entry in the Community Environment and Natural Resources Office. Based on the results, “User-friendly systems” obtained the highest factor score of 24 and ranked 1st, indicating that the usability and accessibility of the data entry system greatly influence the efficiency and accuracy of records processing. This suggests that respondents believe that having an easy-to-use and organized system helps reduce delays and minimize errors during data entry activities. The finding supports the study of Chen and Aklikokou (2020), which emphasized that perceived ease of use significantly affects the effectiveness and adoption of digital systems in government institutions. Similarly, Veeramootoo et al. (2018) noted that accessible and efficient electronic systems improve operational performance and user satisfaction in public service organizations.

Meanwhile, “The complexity of the data entry system” ranked 2nd with a factor score of 23, implying that complicated procedures and records processing requirements contribute to longer processing time and possible inaccuracies in encoding. Engin and Treleaven (2019) explained that complex administrative systems may reduce operational efficiency and increase the likelihood of human errors in public sector data management.

On the other hand, “Insufficient training” and “Lack of clear guidelines” both obtained a factor score of 18 and ranked 3.5, indicating that limited employee knowledge and unclear procedures also affect the efficiency of data entry operations. This finding is supported by Alotaibi et al. (2024), who emphasized that employee competency, technical training, and standardized procedures are essential in minimizing data entry errors and improving information accuracy.

Lastly, “Handling large volumes of data” ranked 5th with a score of 15, suggesting that workload volume still affects records processing, although it is considered less significant compared to the other factors. Oberski (2017) stated that increasing data volume may affect processing accuracy and organizational efficiency if effective records management systems are not properly implemented.

The findings imply that records management in DENR-CENRO Calanasan can be improved through the implementation of more user-friendly systems, clearer operational guidelines, and continuous employee training. Simplifying procedures and enhancing staff competency may help reduce processing delays and minimize data entry errors.



Furthermore, strengthening records management practices through improved systems and standardized procedures can enhance data accuracy, efficiency, and the overall quality of public service delivery within the office. Ocampo et al. (2019) emphasized that efficient public service systems and standardized operational processes significantly contribute to improved organizational performance and client satisfaction in government agencies.

Table 4: Issues on processing Time and error rates on Data Entry in record Management

Issues and Concerns	Recommended Strategies for Enhanced Records Management in DENR-CENRO Calanasan
1. Errors frequently occur during data entry	Implement regular monitoring and validation of encoded records to minimize inaccuracies. Establish quality control measures such as double-checking of entries and periodic data audits to ensure data accuracy and reliability.
2. Complexity of the data entry system	Simplify and improve the data entry system by adopting more user-friendly and organized procedures. Enhance system design and workflow processes to make records encoding easier, faster, and more efficient for employees.
3. Insufficient training	Conduct regular training, seminars, and capability-building activities for employees involved in records management and data entry. This will improve employees' technical skills, efficiency, and understanding of proper records handling procedures.
4. Lack of clear guidelines	Develop and implement standardized policies, manuals, and operational guidelines for data entry and records management. Clear procedures will help ensure consistency, accuracy, and proper workflow within the office.
5. Handling large volumes of data	Improve records organization and adopt digital records management systems to efficiently manage large amounts of data. Proper classification, storage, and electronic filing systems may help reduce processing delays and improve information retrieval.

Table 4 presents the issues and concerns encountered in data entry and the recommended strategies for enhanced records management in DENR-CENRO Calanasan. One of the primary issues identified was the frequent occurrence of errors during data entry. To address this concern, the study recommends implementing regular monitoring and validation of encoded records, including quality control measures such as double-checking entries and conducting periodic data audits. According to Garza et al. (2023),



systematic monitoring and verification processes help reduce inaccuracies and improve the reliability of organizational records management systems.

Another issue identified was the complexity of the data entry system. The study recommends simplifying and improving the system through the adoption of more user-friendly and organized procedures to make records encoding faster and more efficient. Chen and Aklikokou (2020) emphasized that user-friendly digital systems improve operational efficiency and encourage effective utilization of information management systems in government institutions.

Insufficient training was also recognized as a factor affecting data entry efficiency. The proposed strategy involves conducting regular training, seminars, and capability-building activities for employees involved in records management and data entry. Alotaibi et al. (2024) noted that continuous employee training and competency development are essential in minimizing data entry errors and enhancing records management efficiency.

The lack of clear guidelines was another issue identified in the study. To address this concern, the implementation of standardized policies, manuals, and operational guidelines for data entry and records management was recommended. Shepherd and Yeo (2003) explained that standardized procedures and proper documentation practices ensure consistency, accountability, and accuracy in records management operations.

Lastly, handling large volumes of data was identified as a challenge affecting records processing. The study recommends improving records organization and adopting digital records management systems to efficiently manage large amounts of data. Proper classification, storage, and electronic filing systems may help reduce processing delays and improve information retrieval. Matheus et al. (2021) emphasized that digital records systems and transparent information management practices improve organizational efficiency and accessibility of public records.

Conclusion

The study assessed the issues in processing time and error rates in data entry as a basis for enhanced records management in the Community Environment and Natural Resources Office. Findings revealed that the respondents generally agreed that the current data entry system is efficient and capable of supporting office transactions and records processing. However, occasional errors during data entry and delays in processing were still observed, indicating that improvements in records management practices remain necessary.



The study further identified several factors affecting processing time and error rates, including the complexity of the data entry system, insufficient employee training, lack of clear operational guidelines, and the handling of large volumes of data. Among these, the usability of the system was considered the most significant factor influencing the efficiency and accuracy of records processing. These findings imply that although DENR-CENRO Calanasan maintains a generally functional records management process, operational challenges still affect the accuracy, reliability, and timeliness of data management and service delivery.

Moreover, the study emphasized that effective records management is essential in ensuring transparency, accountability, and efficient public service within government institutions. Delays and inaccuracies in data entry may negatively affect document retrieval, workflow efficiency, and the credibility of organizational records. Thus, strengthening records management systems through improved procedures, employee competency, and technological support is necessary to achieve more efficient and reliable office operations.

Therefore, the study concluded that enhancing records management practices in DENR-CENRO Calanasan through user-friendly systems, clear guidelines, continuous employee training, and improved monitoring mechanisms can significantly reduce processing delays and data entry errors. These improvements may contribute to better organizational efficiency, accurate record keeping, and improved quality of public service delivery.

Recommendations

Based on the findings of the study, it is recommended that the Community Environment and Natural Resources Office improve its records management practices through the adoption of more user-friendly and organized data entry systems to minimize processing delays and data entry errors. The office should also conduct regular training and capability-building activities to enhance employees' technical skills and efficiency in records handling.

Furthermore, clear operational guidelines and standardized procedures should be implemented to ensure accuracy, consistency, and proper workflow in data management. Regular monitoring and data validation are likewise recommended to maintain the reliability and integrity of records. The adoption of digital records management systems may also help improve data storage, retrieval, and overall operational efficiency. Lastly, future researchers may conduct similar studies with a wider scope and larger number of respondents to further strengthen records management practices in government offices.



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