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Design of a Web-Based Archive Information System at the Ta Village Office, Tanete Riattang District, Bone Regency

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ABSTRACT

In the current digital era, the importance of effective archive management is increasingly evident for ensuring administrative efficiency, data security, and quality public services. This study aims to design a web-based archive information system for the Ta Village Office, Tanete Riattang District, Bone Regency. The Waterfall model was applied, covering needs analysis, system design, coding with PHP, HTML, CSS, JavaScript, and MySQL, as well as black-box testing. The system, involving the secretary and village head as users, successfully manages incoming and outgoing letters and certificates more quickly and accurately. Key features include digital archive management, quick search, activity history, and data export. Testing and user feedback confirmed that the system accelerates services, reduces the risk of data loss, and supports real-time access. Thus, the system offers an innovative solution to improve transparency, accountability, and service quality in village administration.

Keywords: Information systems, archives, web-based.

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1. INTRODUCTION

The rapid advancement of information technology has created new opportunities for governments to improve the quality, efficiency, and accountability of their public services. In modern governance, technology is no longer an option but a necessity to ensure that institutions

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can meet citizen expectations in a timely and transparent manner. Among the many areas influenced by technological development, archive management plays a particularly strategic role. Archives serve not only as repositories of information but also as authentic evidence of administrative activities, as well as legal and historical documentation that can be used as the basis for decision-making. Effective and efficient archive management ensures that government institutions can respond quickly to citizen requests, provide accurate information, and maintain institutional memory for future reference. Recent studies emphasize that digital records management has become a critical component of public sector modernization because it supports information accessibility, organizational memory, and evidence-based governance in increasingly digital administrative environments (Dootson et al., 2021; Wan Hashim et al., 2022)

Despite the critical importance of archives, many village and sub-district government offices in Indonesia still rely on manual methods for managing documents. Physical filing systems, often consisting of ledgers, binders, and storage cabinets, are vulnerable to damage, loss, and disorganization. More importantly, manual systems are time-consuming and inefficient, requiring staff to spend excessive amounts of time searching for individual documents. In some cases, the retrieval of a single document may take half an hour or more, and delays are compounded when records are poorly organized or misfiled. Such inefficiencies are not merely technical shortcomings but have broader implications for the quality of public service delivery. Slow and unreliable services undermine citizen trust in government institutions and weaken the accountability of local administrations. Similar challenges have been reported internationally, where inadequate records management practices hinder organizational effectiveness and reduce the capacity of government agencies to provide timely and transparent public services (Hagen, 2023; Matlala & Maphoto, 2022)

The challenges faced by the Ta Village Office are not unique. Research by Veraniansyah and Sukma (2019) showed that ineffective management of incoming and outgoing letters is a widespread problem in local government institutions across Indonesia. Suryadi (2019) further argued that poor archive systems contribute to inefficiency, reduced transparency, and limited accountability in public administration. Meanwhile, studies such as Chofifah et al. (2022) and Yusa et al. (2023) highlighted the potential of web-based information systems to improve service delivery at the local government level. However, while many studies have addressed e-government systems in general, relatively few have focused specifically on archive management at the village level, which is the frontline of government service delivery. This research gap underscores the urgency of designing and implementing a digital solution tailored to the needs of small-scale local administrations.

In addition to addressing local needs, this study also aligns with broader national priorities. The Indonesian government has launched a digital transformation agenda to modernize public services and improve administrative efficiency. A key component of this agenda is the adoption of information systems that enhance transparency, accountability, and responsiveness. Archive

management, as an integral part of public administration, has been identified as an area in urgent need of reform. By developing a web-based archive information system, this study not only provides a solution for the Ta Village Office but also contributes to the national goal of building a modern, digital, and citizen-oriented public sector. This objective is consistent with international evidence indicating that digital government initiatives can significantly improve transparency, accountability, and citizen trust when supported by effective information management systems (Meijer & Grimmelikhuijsen, 2022; Farida & Lestari, 2021).

Based on this background, the research formulates two main questions: (1) How can a web-based archive information system be designed to facilitate the storage, retrieval, and management of documents at the Ta Village Office? and (2) How can the system be tested to ensure that its functions meet user requirements and administrative needs? These research questions address both the technical design of the system and its practical application in improving efficiency and service delivery.

The objective of this research is therefore twofold. First, to design a web-based archive information system that meets the specific needs of the Ta Village Office by providing features such as digital storage, quick search, activity tracking, and data export. Second, to test the system using black-box methods and user evaluations to confirm that all features work as intended and provide tangible improvements in efficiency. Through this dual objective, the study aims to contribute both to the technical development of information systems and to the practical improvement of administrative services in village governance.

Finally, this research offers both theoretical and practical contributions. Theoretically, it enriches the literature on e-government and digital archive management, particularly in the context of small-scale public administration. Practically, it provides a tested and proven system that can serve as a model for other village and sub-district governments facing similar challenges. The findings demonstrate that even local institutions with limited resources can benefit from adopting web-based systems, thereby contributing to the larger agenda of digital governance in Indonesia. In sum, this research not only addresses an immediate administrative problem but also offers broader implications for improving efficiency, transparency, and accountability in public service delivery.

2. RESEARCH METHOD

This research was carried out at the Ta Village Office, Tanete Riattang District, Bone Regency, South Sulawesi which is the object of study related to the management of the archives of incoming letters, outgoing letters, and certificates. The research period lasts for three months, namely February to May 2025, covering the stages of preparation, design, trial, and evaluation of the system.

The research approach used is a descriptive method with a Waterfall system development model. This model was chosen because it provides a systematic workflow, from needs analysis to implementation, so that it is in line with the research objectives of designing a web-based archival information system.

Data collection techniques were carried out through interviews with village office staff and analysis of existing administrative documents. The data obtained were analyzed descriptively to understand the manual archiving workflow and the users' needs for a digital system.

System testing was conducted using the black-box testing technique to ensure that all features functioned according to user requirements. Furthermore, system trials were carried out involving the secretary and the village head as primary users to obtain feedback on the practicality and effectiveness of the system.

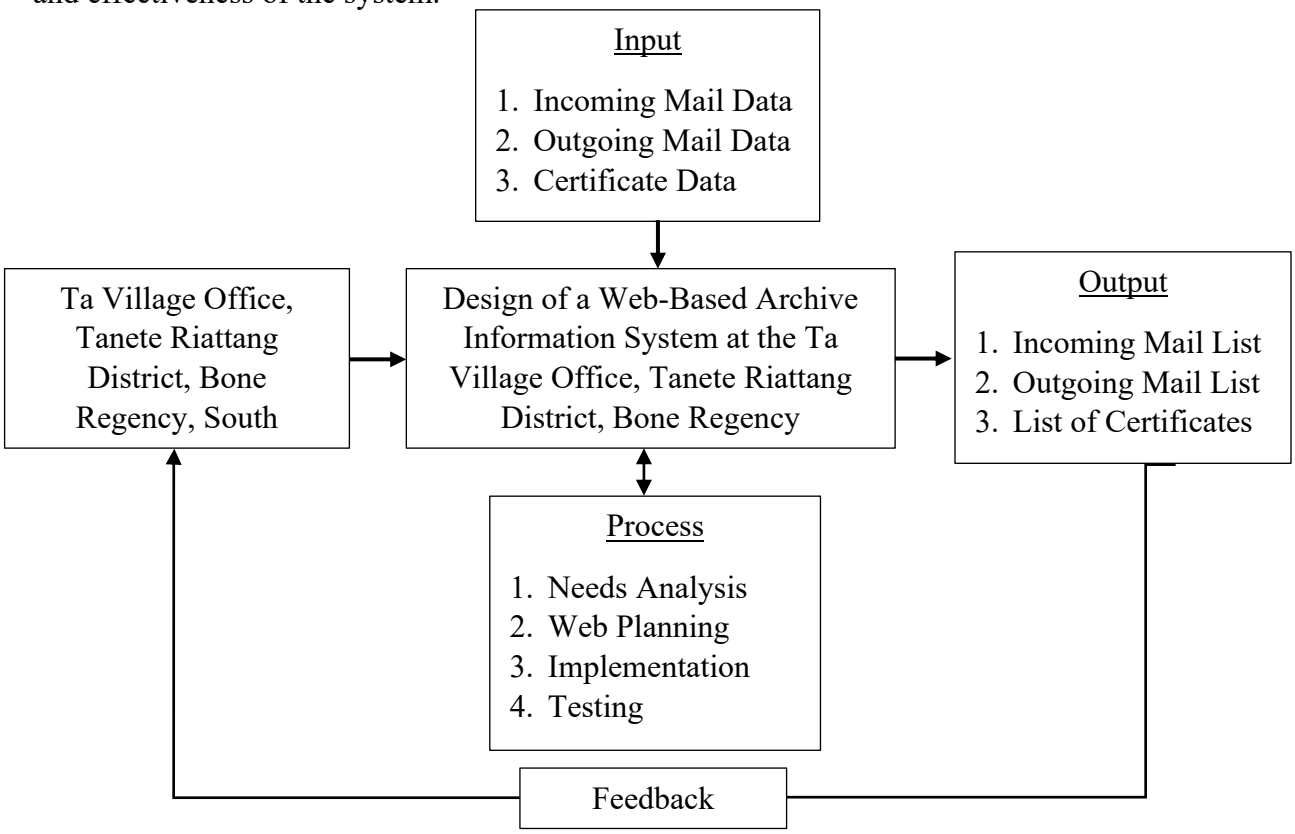

Figure 1. Research Framework
Source: author (2025)

3. RESULT AND DISCUSSION

The results of this research are in the form of the design and implementation of a web-based archival information system used at the Ta Village Office, Tanete Riattang District, Bone Regency. This system was developed to overcome the problem of manual archive management that has been causing delays in document searches and a decrease in the quality of public services.

3.1 RESULT

The design of the system in this study resulted in a website-based E-Archive information system at the Ta Village Office, Tanete Riattang District, Bone Regency

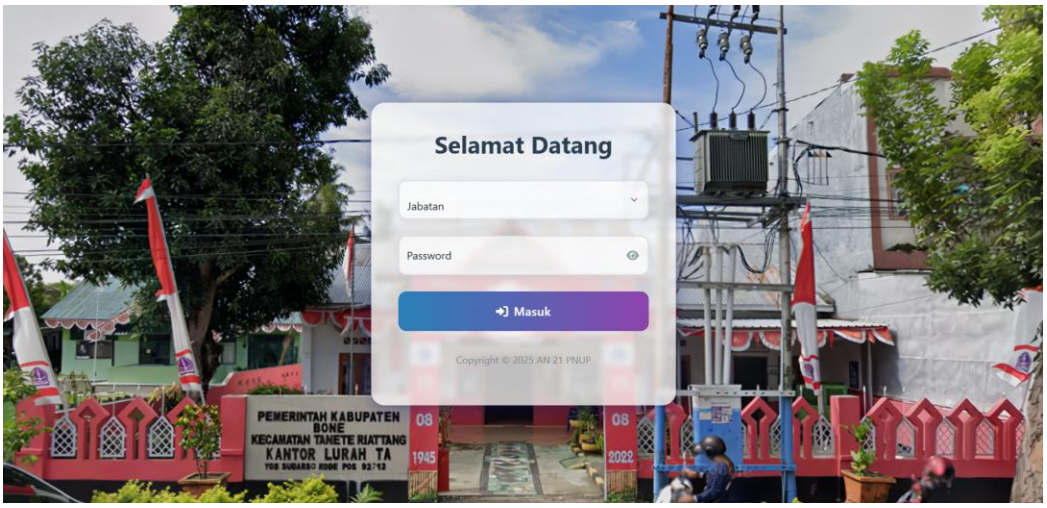

Figure 2. The image above shows the login display on the information system of Ta Village

Figure 3. The image above shows the display of the main page on the information system of Ta Village

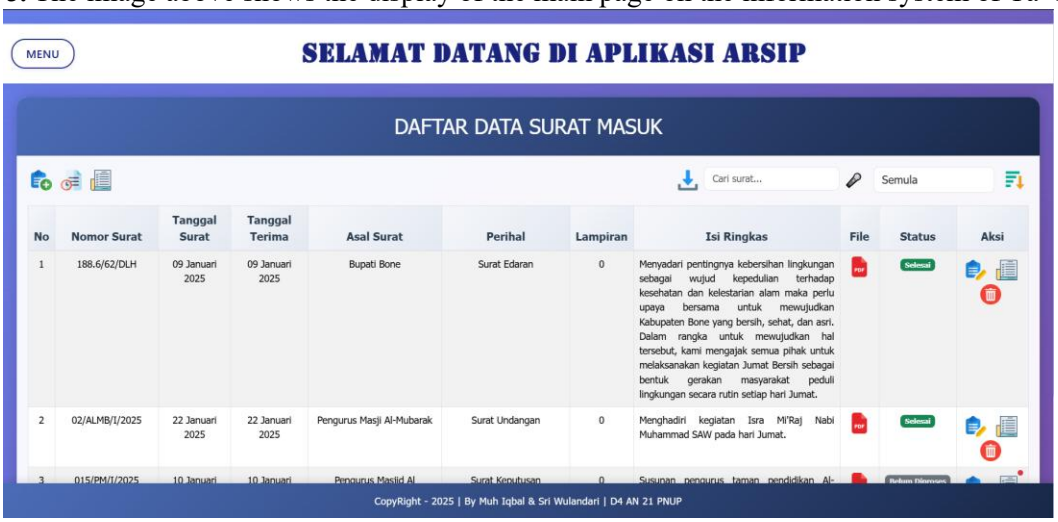

Figure 3. The image above is a view of the mail service archive containing the incoming mailing list

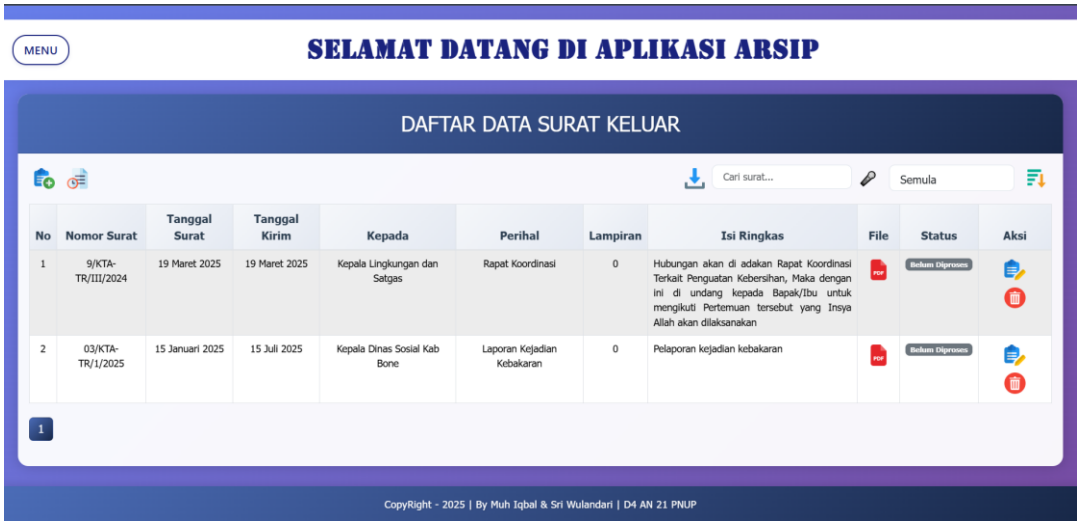

Figure 4. The image above is a display the mail service archive which contains a list of outgoing letters.

Figure 5. The image above is a display of the letter service archive which contains a list of letters of reference.

The main features of the system include incoming mail, outgoing mail, and certificate management, quick archive search, activity history, and data export in Excel and PDF formats. The system also implements the division of access rights, namely the secretary as the administrator who inputs data and the village head as the user who verifies and downloads documents.

To ensure the reliability of the system, testing is carried out using the black box testing method. The results show that all features can function as needed (Table 1).

Table 1. System Testing Results (Black Box Testing)

No.	Tested Features	Description of Testing	Result
1.	Login	Enter your username and password	Succeed
2.	Incoming Mail	Input, edit, delete, archive search	Succeed
3.	Outgoing Letter	Input, edit, delete, archive search	Succeed

4.	Certificate	Input, edit, delete, archive search	Succeed
5.	Export Data	Export documents to Excel/PDF format	Succeed

Source: Primary data (2025)

The efficiency of the system is also reflected in the comparison of archive search times. Before using a web-based system, document searches take an average of 30–35 minutes. After using the system, the search time is drastically reduced to less than 1 minute (Table 2).

Table 2. Archive Search Time Comparison

No.	Types of Archive Management	Average Search Time	Information
1.	Manual (ledger & hardcopy)	30-35 minutes per document	Depending on the number of old archives
2.	Web-based system	<1 minute per document	Using digital search tools

Source: Primary data (2025)

In addition to technical trials, the system was also field-tested by involving the secretary and village head as the main users. The results of the interviews showed that the apparatus felt helped because the system speeds up data processing, reduces the risk of losing archives, and improves the quality of administrative services.

3.2 DISCUSSION

3.2.1 Effectiveness of the Web-Based Archive Information System

The findings of this study reveal that implementing a web-based archive information system has significantly improved efficiency in administrative processes at the Ta Village Office. Manual archive management, which relied on physical ledgers and filing cabinets, frequently caused delays and errors. For example, retrieving a single document could take up to 30–35 minutes, particularly when older records were involved. After adopting the system, retrieval time decreased to less than one minute. This efficiency gain is not only technical but also managerial, as it allows staff to redirect their time and energy to other essential tasks..

Such improvements resonate with Suryadi (2019), who explained that inefficient manual systems reduce organizational performance and erode citizen trust. Similarly, Imasita et al. (2022) demonstrated that electronic filing systems enable organizations to locate records in under five minutes, a result echoed in this study. Moreover, the inclusion of advanced features such as quick search, activity logs, and export functions enhances accuracy and reduces human error, strengthening accountability. Rosalin et al. (2022) also emphasized that digital archive systems help maintain data integrity, ensuring that official records remain authentic and tamper-proof.

This research therefore provides empirical evidence supporting the transition from manual to digital archives, reinforcing the idea that information systems are not optional add-ons but essential tools for improving administrative workflows in modern governance.

3.2.2 Implications for Public Service and Accountability

The system also has important implications for the quality of public services. Prior to its implementation, residents often had to wait several days to obtain necessary documents, creating frustration and dissatisfaction. By contrast, with the new system, services such as issuing domicile certificates, business permits, or death certificates are processed more quickly, thereby enhancing citizen satisfaction. This finding is in line with Chofifah et al. (2022), who found that web-based systems improve responsiveness and service delivery at the village level.

Security and accountability are additional benefits. Physical archives are highly vulnerable to loss, theft, or environmental damage. By digitizing archives, documents are stored in a centralized database that is more secure and allows for backups. Veraniansyah & Sukma (2019) argued that well-structured archive systems safeguard institutional memory and provide reliable references for decision-making. In this study, the system's export and reporting features further strengthen transparency and make it easier for administrators to generate accurate reports for audits and evaluations. Yusa et al. (2023) note that transparency in reporting is a cornerstone of public trust, and this research confirms the same principle at the grassroots governance level.

User feedback also highlighted a reduction in administrative burden. Both the village secretary and head reported that daily tasks became easier to manage, with fewer errors and less time wasted on manual record searches. This aligns with the concept of e-government, which emphasizes using digital solutions to enhance efficiency, transparency, and citizen orientation in service delivery.

3.2.2 Broader Contributions And Limitations

The broader contribution of this study lies in its potential scalability. Many village and sub-district governments in Indonesia continue to face similar challenges in archive management, often due to limited resources and technological infrastructure. The success of the system at the Ta Village Office demonstrates that even small-scale administrations can benefit from adopting web-based solutions. Thus, this system can serve as a replicable model for other institutions.

However, some limitations must be acknowledged. The system was only tested in one office, which limits generalizability. Future research should examine multiple case studies across different regions to explore adaptability. Moreover, the system currently runs on a local server, which may not be optimal for larger-scale deployments. Transitioning to a cloud-based infrastructure could enhance accessibility and scalability but also introduces challenges such as cybersecurity and data privacy. Addressing these issues will be important for future implementations.

In conclusion, the discussion underscores that the web-based archive information system has not only improved efficiency and accuracy in administrative processes but also contributed to greater transparency, accountability, and citizen satisfaction. Its successful implementation at the Ta Village Office demonstrates the strategic importance of digital transformation in local governance and offers a valuable reference for broader applications in Indonesia's public administration sector.

4. CONCLUSION

This research successfully designed and implemented a web-based archive information system at the Ta Village Office, Tanete Riattang District, Bone Regency. The system has been proven to improve the efficiency of archive management compared to manual methods, particularly in reducing document retrieval time from 30–35 minutes to less than one minute. Testing and field trials confirmed that all main features—including incoming and outgoing letter management, certificate handling, archive search, and data export—functioned properly and supported administrative needs. Feedback from the secretary and village head also indicated that the system accelerates administrative services, improves data security, and facilitates reporting.

Nevertheless, this study has several limitations. First, the system was only tested in one village office, which restricts the generalizability of the findings. Second, the system currently operates on a local server, which may face challenges in terms of scalability and cybersecurity when applied in broader contexts.

Overall, this study demonstrates that a web-based archive information system can be an innovative solution to improve efficiency, transparency, and accountability in local governance. Its success at the Ta Village Office highlights the potential for replication in other government institutions to support digital transformation in public administration.

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