



Improving Village Correspondence Services With An Open Access Repository System

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DOI:

<https://doi.org/10.53697/jkomitek.v5i2.2952>

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Received: 06-10-2025

Accepted: 14-11-2025

Published: 21-12-2025



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Abstract: Village correspondence services are one of the important functions of village government in providing administrative services to the community. However, conventional systems that still rely on manual recording and physical storage often cause various obstacles such as slow processes, difficulties in searching archives, and minimal transparency in public services. This study aims to design and develop a web-based open access repository system to improve correspondence services in Muara Tiga Ilir Village, Kedurang District, South Bengkulu Regency. The research method used is Research and Development (R&D) with the stages of identifying potential problems, data collection, system design, design validation, design revision, product trials, and the final product. The developed system has key features such as admin login for access security, an admin dashboard as a control center, automatic input and creation of outgoing letters, uploading incoming and outgoing letters, searching for letters based on date ranges, and open access for the public to download the required letters. The test results show that the system is able to improve the efficiency of the correspondence process, reduce service time, increase transparency through open access, and facilitate digital archiving. The implementation of this system is expected to be a model for digital transformation of public services at the village level that supports the principles of good governance and smart villages. Black box testing functions as a whole and based on the results of questionnaire data processing, the average value in the pre-test stage of 81.75% (Agree category) increased to 86.70% (Strongly Agree category) in the post-test stage. This shows an increase of 4.95 % , which indicates that the tested system has experienced improvements and increased user satisfaction after implementation.

Keywords: Repository System, Open Access, Village Correspondence, Digital Services

Introduction

In the digital era, information technology has become an integral part of various fields, including government. E-governance, or the application of information technology in government, has become a global trend to increase efficiency and transparency in public services (Siregar *et al.* , 2023) . In the village context, developing information systems that can improve the efficiency and accessibility of correspondence is crucial. This can not only speed up administrative processes but also increase village residents' satisfaction with village government services (Stighfarrinata, 2025) .

Village correspondence is a crucial administrative activity. However, in practice, village correspondence services often encounter various obstacles. The letter-writing

process is still done manually, which is time-consuming and prone to typographical errors. Furthermore, the use of physical books for archiving letters makes data retrieval inefficient (Taslia, Sunoto, and Hendrawan, 2023). Villagers often have difficulty obtaining copies of important documents, such as domicile certificates, business licenses, and others . This is not only time-consuming but can also hinder various social and economic activities in the village (Romadhon and Maryam, 2023) .

Obstacles to village mail services can negatively impact various aspects. For example, slow and inefficient processes can hinder economic activities, such as obtaining business permits or obtaining business certificates. Furthermore, the lack of accessibility to important documents can hinder villagers' access to public services, such as education and healthcare. Therefore, developing an open-access repository system could be an effective solution to these problems. This system would have several key features, including digital storage and archiving, advanced search capabilities, high accessibility, and high security.

The purpose of this study is to analyze the constraints experienced in village correspondence services, develop an open access repository system that can overcome these constraints, and implement an open access repository system in the village and evaluate its effectiveness in improving correspondence services. The benefits of this study are to increase efficiency in managing correspondence for the village government, increase the accessibility of important letters for villagers, and contribute to the development of information systems that can improve the efficiency and accessibility of correspondence in the village. With the development of an open access repository system, it is expected that correspondence services in the village can be significantly improved. Efficiency in managing correspondence can be improved, as well as the accessibility of important letters for villagers can be improved.

From the above explanation, this research raises the title of improving village correspondence services with an open access repository system.

Methodology

Problem Analysis

Correspondence services in villages currently face various fundamental challenges, particularly those related to efficiency, transparency, and accountability. Conventional systems that rely on manual recording and physical storage often lead to slow letter processing , lost documents, and difficulties in tracking archives. Furthermore, limited public access to information on village correspondence creates distrust and low citizen participation in administrative oversight. Other challenges include limited human resources, with village officials not yet fully tech-savvy, and inadequate infrastructure, such as patchy internet access or limited computer hardware.

mail system aims to create a digital transformation in mail administration services at the village level. First, the system is designed to improve service efficiency by automating the process of creating, archiving, and distributing letters , reducing turnaround time from days to hours or minutes. Second, the system aims to increase transparency by providing controlled access for the public to monitor the status of letters and public documents. Third, this digital repository is designed to minimize document loss or damage due to manual storage, while also facilitating archive searches through keyword-based search

features. Fourth, this system is designed to empower village communities through active participation in administrative oversight, while simultaneously improving the digital literacy of village officials and residents. Therefore, developing an open-access repository system is a potential solution to address this issue, provided it is accompanied by human resource training, community outreach, and adequate policy support to ensure its sustainability.

System Design Method

Research and Development (R&D) is a research method aimed at developing new products, systems, or processes through a series of systematic stages. This approach combines elements of pure research (theoretical exploration) with applied development (practical implementation). In the context of information technology, R&D is often used to create innovative solutions such as applications, digital platforms, or new business models (Waruwu, 2024) . This method is particularly relevant for the development of an open-access village letter repository system because it allows researchers not only to analyze needs but also to produce a ready-to-use product.



Figure 1. R & D (Research and Development) Development Model

Potential Problems

The first stage began with identifying potential problems through direct observation and in-depth interviews with village officials and the community, which revealed major obstacles such as slow letter processing (taking 3-7 days), physical archives that are easily lost, and minimal transparency in document tracking.

Data collection

Next, intensive data collection was conducted through an analysis of letter samples from 2025, namely by reviewing existing letter data. Researchers collected samples of outgoing and incoming letters to be used as sample letters for the website that will be created in the future. Other data collection included photographs of activities during the research.

Design

At the design stage, the researcher created a *wireframe* of the design interface to improve mail services with an open access repository system, which started from creating a system flowchart, by designing a system flow diagram, such as a *flowchart* , UML (

Unified Modeling Language), and the process of the relationship between actors and system design, as well as the design of the web design that will be built.

Mail System Flowchart

A flowchart is a graphical representation of a process or workflow that is systematically arranged using standard symbols such as rectangles for processes, parallelograms for input/output, and circles for the beginning or end of a process. The main purpose of a flowchart is to visualize the steps in a system or procedure to make it easier to understand, analyze, and identify potential improvements (Imbar Nursetyo, Ariani, and Khalidah, 2023) . Flowcharts are often used in programming, systems analysis, project management, and business procedure documentation to explain the logical flow in detail before the system is implemented. With a flowchart, communication between team members becomes more effective because all parties can understand the process being explained more clearly and structured.

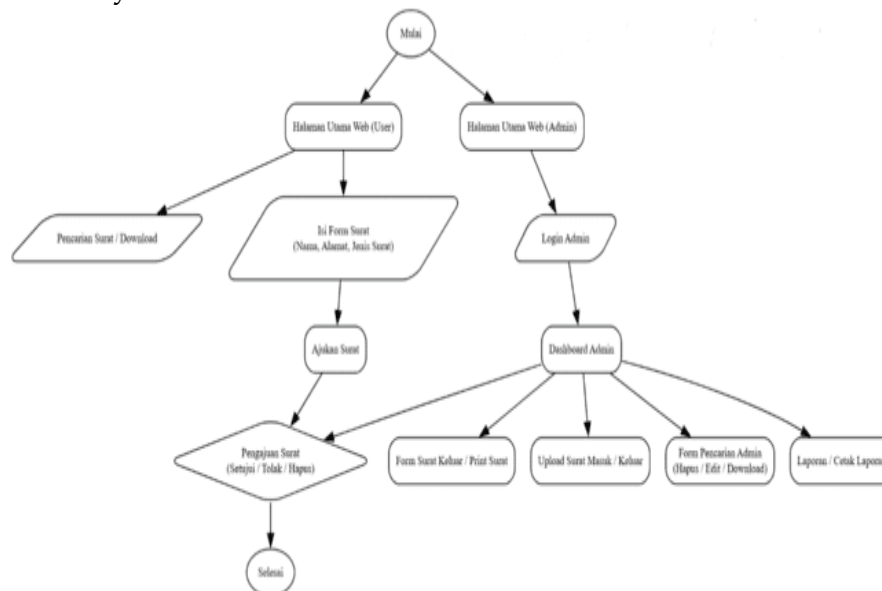


Figure 2. Flowchart Mail System

Results and Discussion

Result

The test results show that the system is able to improve the efficiency of the correspondence process , reduce service time, increase transparency through open access, and facilitate digital archiving. The implementation of this system is expected to be a model for digital transformation of public services at the village level that supports the principles of good governance and smart villages. Black box testing functions as a whole and based on the results of questionnaire data processing, the average value in the pre-test stage of 81.75% (Agree category) increased to 86.70% (Strongly Agree category) in the post-test stage. This shows an increase of 4.95 % , which indicates that the tested system has experienced improvements and increased user satisfaction after implementation.

Discussion

This chapter will discuss the creation of an open-access repository system specifically designed to improve correspondence services in Muara Tiga Ilir Village, Kedurang District, South Bengkulu Regency. This system can be accessed through the website using the keyword suratdesa.space. The system built has two main categories of features that support each other to create an integrated service ecosystem. The administrative features for admins include an admin login system that functions as a security gateway to control administrator access, an admin dashboard that serves as a control center to manage all system activities, an outgoing mail input feature with automatic templates that include automatic letter numbers, subject input, letter destination, creation date, and letter content, as well as an outgoing and incoming mail upload facility that allows administrators to upload and archive documents in PDF format into a digital repository. In addition, the system is also equipped with mail category management for managing letter type classification and an automatic report generation feature for monitoring and evaluating service performance.

Main View

The home page is the initial page that can be accessed by the admin to log in and there is a mail search button , where this button is used by other users or users to access the mail search.



Figure 3. Main System Display Page

the letter form page

The image displays a 'Form Pengajuan Surat' (Letter Submission Form). The form is titled 'Form Pengajuan Surat' in purple. It contains three input fields: 'Nama Lengkap' (Full Name), 'Alamat' (Address), and 'Jenis Surat' (Letter Type). The 'Jenis Surat' field is a dropdown menu with the text '-- Pilih Jenis Surat --'. Below the input fields is a purple button labeled 'Kirim' (Send).

Figure 4. Contents page of the letter form

letter submission form page is used to submit letters. Enter your full name and address, select the letter type, and then click send to process.

Login Page

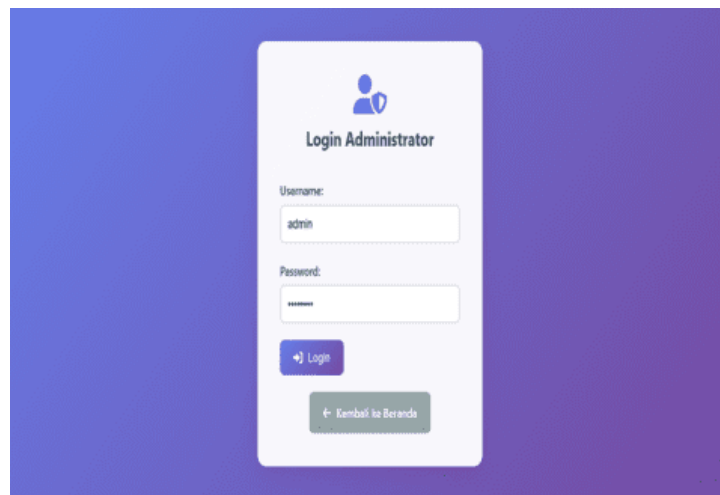


Figure 5. System Admin Login Page

On this login page, the admin has access rights to use the system. To log in, the admin enters the username and password.

Mail Search View

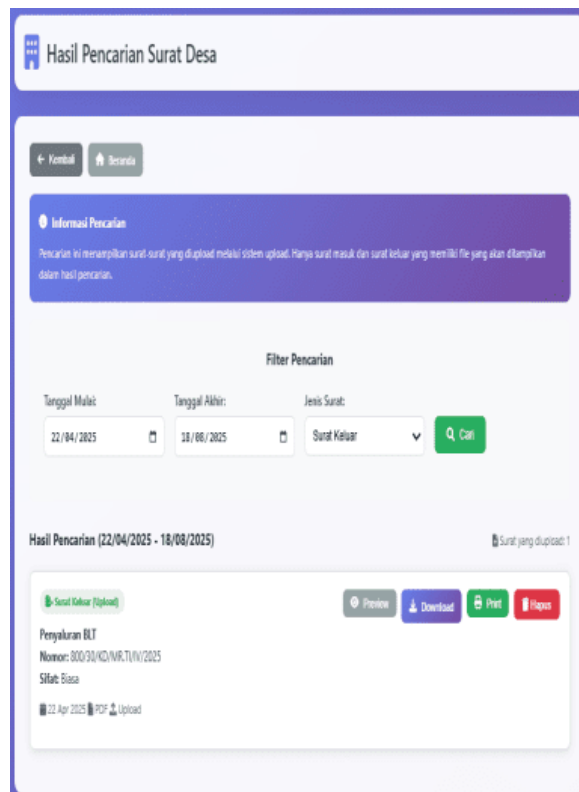


Figure 6. System Mail Search Page

On this letter search page, there are access rights for all users who search for incoming and outgoing letters, and there is a letter download button for user needs.

Admin Dashboard Page

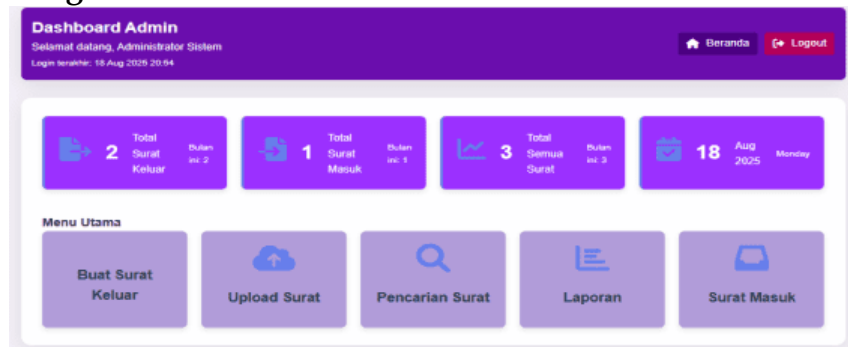


Figure 7. System Admin Dashboard Page

The image shows the dashboard of the village mail administration system, designed to facilitate the digital management of incoming and outgoing mail. The interface uses a modern style with soft purplish-blue hues and representative icons, giving it a professional and user-friendly feel. At the top, there's a header with a welcome message to the system administrator, the last login information, and clearly visible "Home" and "Logout" navigation buttons.

The center of the dashboard presents a summary of key statistics in the form of four information cards: Total Outgoing Mail, Total Incoming Mail, Total All Mail, and Today's Date. Each is accompanied by an icon and a total indicating mail activity for the current month. Below this is the Main Menu, which consists of four main features:

1. Create Outgoing Letters – to create and manage official outgoing letters using village templates
2. Upload Letters – allows users to upload letters in PDF or image format, upload letters in the form of incoming and outgoing letters that have been validated.
3. Mail Search – mail archive search feature by date, and
4. Reports – presents reports and statistics on village letters .

The layout structure uses a responsive and clean grid system, supporting easy navigation and a good user experience. Overall, this interface combines aesthetics with functionality, making it suitable for village officials who need an efficient and user-friendly mail management system.

Create Outgoing Letter Page

Figure 8. Page for creating outgoing system letters

The image below shows the outgoing letter creation form page within the village letter administration system. The interface is divided into two main sections: the letter data input form on the left and the letter preview on the right. The design is modern, with soft colors like light blue and purple, giving a professional yet user-friendly feel.

In the input form section, users can fill in important information related to the outgoing letter to be created, such as: Letter Number, Letter Date, Letter Nature (with options such as "Important"), Letter Subject, Letter Content, and Name and Position of Signatory.

Once the information is filled in, users can choose to save the letter using the "Save Letter" button or print a preview directly using "Preview & Print." This feature is very helpful in ensuring the letter's content and formatting are correct before finalizing it.

Meanwhile, on the right, a real-time preview of the letter displays the final output of the outgoing letter, which will be printed. The letter format follows the official government structure, complete with letterhead, letter number, body, closing, and signature of the relevant official. This allows users to immediately see how the letter will look formally without having to navigate pages or open external files.

Overall, this interface is very functional and intuitive, supporting the efficiency of village officials in creating official letters quickly, accurately, and in accordance with applicable administrative formats.

Letter Upload Page

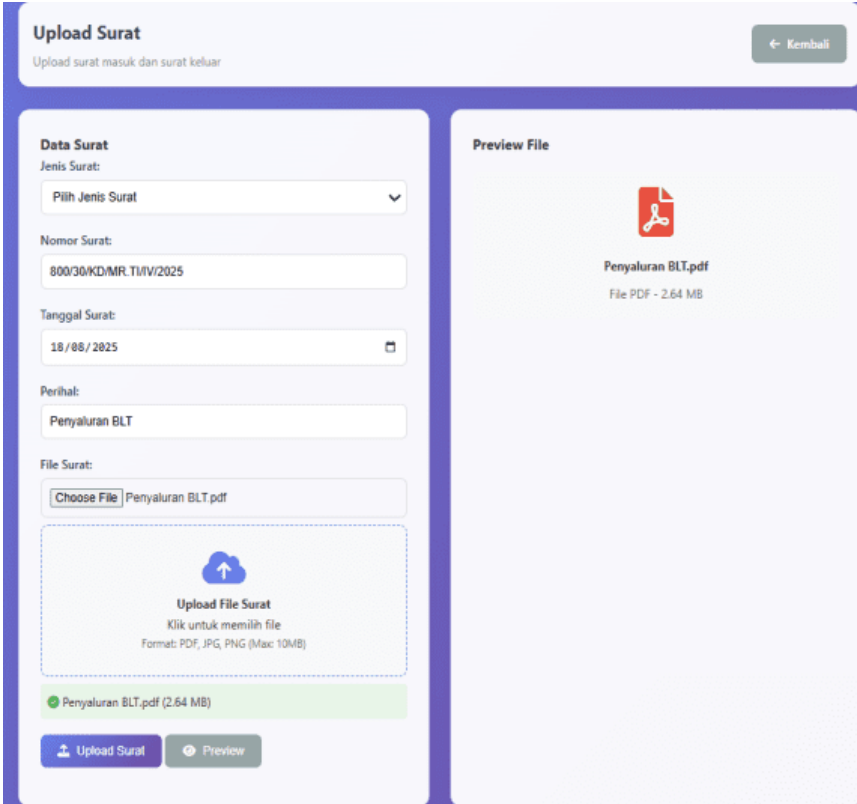


Figure 9. System Letter Upload Page

The image shown in this image shows the Upload Letter page in the digital village letter administration system. This interface is designed to facilitate the uploading of incoming and outgoing letter documents with a simple and intuitive process. The page is

divided into two main sections: a letter data entry form on the left and a letter file preview on the right. The page design remains consistent with an elegant purplish-blue color scheme and clean, easy-to-understand UI elements. In the submission form, users are asked to provide several important details related to the letter to be uploaded. This information includes:

1. Mail Type (dropdown to select incoming or outgoing mail)
2. Reference number.
3. Letter Date
4. Regarding
5. Selectable Mail File from local device.

On the right side of the page, there's a File Preview, which displays the file type icon, file name, and size. While it doesn't display the file's contents in detail, this feature is very useful for ensuring the uploaded file is correct before further processing. Finally, there are two action buttons: "Upload Letter" to save the file to the system, and "Preview" to further review the uploaded file's contents. Overall, this interface effectively supports the document digitization process, ensuring that village officials can quickly archive and manage official documents digitally, efficiently, and in an organized manner.

Village Letter Data Report and Statistics Display

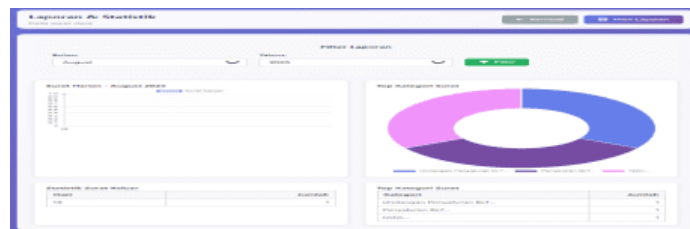


Figure 10. Display of Village Letter Data Report and Statistics

This view features the Reports and Statistics page, which allows users to filter mail data by month and year. It displays graphs and tables related to daily outgoing mail and the most common mail categories, although data is not yet available. There are also buttons to return to the dashboard and print the report. The design is simple and focuses on presenting village mail statistics.

Incoming Mail List view

| ID | Nama Pengirim | Jenis Surat | Isi | Tanggal | Status | Aksi |
|----|---------------|------------------------|-----------------------|---------------------|----------|---------------------|
| 2 | iman | Surat Keterangan Usaha | karang indah bengkulu | 2025-08-19 13:26:26 | Menunggu | Setujui Tolak Hapus |

← Kembali ke Dashboard

Figure 11. View of the Incoming Mail List

This view displays the Incoming Mail List page, which displays information about letters from residents, such as sender name, type of letter, content, date, and status. Admins can easily verify letters using the Approve, Reject, or Delete buttons. The design is simple and supports efficient mail checking.

Conclusion

Based on the results of research and development of an open access repository system to improve correspondence services in Muara Tiga Ilir Village, it can be concluded that:

1. Problem Identification Successfully Carried Out: The research successfully identified various obstacles in conventional correspondence services in villages, such as slow processes (3-7 days), difficulty in searching for archives, the risk of losing documents, and minimal transparency in services.
2. System Successfully Developed: The development of an open access repository system using the R&D method successfully produced a web application with key features including admin login, management dashboard, automatic outgoing mail creation, uploading incoming and outgoing mail, date range-based search, and open access for the public.
3. Efficiency Improvement Achieved: The system implementation successfully improved the efficiency of mail services by reducing processing time from several days to hours, simplifying archive searches through the digital search feature, and reducing queues at village offices.
4. Increased Transparency and Accountability: The open access repository system provides open access to the public to download required documents, increases transparency of services, and supports the principles of good governance at the village level.
5. Archive Digitalization Realized: The system successfully integrates digital storage that is safe from damage and loss, facilitates archive management, and supports automatic data backup for long-term document security.
6. The results of the black box testing indicate that the system functions can run, and based on the results of the questionnaire data processing, the average value in the pre-test stage of 81.75% (Agree category) increased to 86.70% (Strongly Agree category) in the post-test stage. This shows an increase of 4.95 % , which indicates that the tested system has experienced improvements and increased user satisfaction after implementation.

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