

Village Information System (SIADA) Enhancing the Performance of Village Office Staff

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Abstract. Utilising systems in the administrative process can enhance employee performance and expedite tasks related to archiving and document retrieval. This research aims to develop a Microsoft Access-based administrative information system that has undergone validation by subject matter experts, system experts, and user testing. Furthermore, it assesses the effectiveness of utilising the Microsoft Access-based Administrative Information System. This research employs the Research and Development (R&D) method with the AD-DIE model. The data collected in this study encompass both quantitative and qualitative data, with data analysis techniques involving descriptive statistics. The study results in the creating of the Village Information System (Sistem Informasi Desa – SIADA), which can archive original letter files and automatically categorise outgoing letter data by type. This product has been found highly suitable for use and tested on Village Office staff, improving employee performance at the Jogomerto Village Office, Nganjuk Regency. Future researchers are encouraged to enhance Microsoft Access-based administrative information systems by introducing additional features, such as letter scanning, without needing a dedicated camera or external assistance.

Keywords: Information System; Jogomerto Village Office; Microsoft Access, Performance; Village Administration.

INTRODUCTION

Technology development is no longer a new concept in today's society. Administration encompasses planning activities to organise office work to achieve predefined goals [1, 2, 3]. An information system comprises interconnected components for data collection and information dissemination to support decision-making processes [4, 5]. A well-structured civil registration information system that leverages information and communication technology allows for the streamlined processing of civil registration information at administrative and implementing agency levels [6, 7]. Implementing strategies in the administrative process undoubtedly enhances staff performance in the village office and expedites tasks related to archiving and document retrieval.

An information system consists of interconnected components designed to collect data and distribute information for decision-making purposes,

enabling data's swift, accurate, and precise monitoring and security [3, 8]. A well-designed population administration information system is essential for managing population information at the administrative and executive levels [9]. Creating a design using Microsoft Access and a database greatly facilitates the retrieval of required information or documents [10, 11]. Microsoft Access offers several advantages, including its database design capabilities and access-based filing system, which enable the development of precise and sophisticated applications, along with various features such as form creation, report generation, and data management, including data transmission and filtering [12, 13]. Databases present data in a structured manner, simplifying programming but necessitating archiving strategies to pre-empt data corruption [14, 15].

Given the current state of affairs, where administrative activities in Jogomerto Village still rely on a traditional system, it becomes evident that a transformative approach is imperative to en-

hance efficiency and streamline operations. Letter writing at the Jogomerto Village office is carried out manually, requiring typing each letter individually. This approach significantly hampers the performance of the village office staff due to the time-consuming nature of letter creation. Furthermore, letter filing is done manually by recording each piece of data in a physical book. This situation aligns with research findings, indicating that developing computer-based systems to replace traditional book-based practices in correspondence activities is ongoing [16].

Additionally, when staff needs to retrieve a specific letter, they must manually search for it, which can be time-consuming. Such shortcomings regarding the effectiveness and efficiency of manual work processes hinder employee performance [17]. Adopting an electronic Village Administration System has proven highly suitable for village administration, offering numerous advantages to the overall system [18]. What sets this research apart from previous studies is that this application system focuses on creating outgoing letters, addressing the specific needs of letter-making services at the Jogomerto Village Office in Tanjunganom District, Nganjuk Regency. It also offers a more straightforward yet appealing user interface, catering to the village office staff, the primary target users.

The developed system utilises Microsoft Access as an application that can be accessed offline via a PC or laptop without an internet connection. Letter creation becomes more efficient with the availability of various letter templates, enabling users to select templates as per their requirements. Village information system (Sistem Informasi Desa – SIADA) distinguishes itself by allowing the storage of original letter files in the archive menu and automatically categorising outgoing letter data based on their types. This feature streamlines the archiving process, aligning with research emphasising that technical support is crucial for electronic (digital) archives, contributing to the success of institutions or organisations in the archiving process, file retrieval, and ensuring data security [19, 20]. The development of this administrative information system is poised to enhance employee performance in letter-making processes within the village government, particularly at Jogomerto Village. Thus, the research aims to deliver a product as a Microsoft Access-based administrative information system, validated by material and system experts and tested in small groups. Additionally,

it seeks to assess the effectiveness of implementing the Microsoft Access-based Administrative Information System at the Jogomerto Village Office, Nganjuk Regency.

Advancements in technology have become integral to modern society. Administration involves planning and organising office work to achieve specific goals. Information systems, composed of interconnected components, play a vital role in collecting and disseminating data to facilitate decision-making.

Efficient civil registration information systems, utilising technology, streamline administrative tasks at various levels [21]. Implementing digital procedures in administration enhances staff performance and expedites tasks, such as archiving and document retrieval. Microsoft Access, coupled with databases, simplifies information retrieval and document management. Its features offer advantages, including form creation, report generation, and data management. However, databases require effective archiving strategies to prevent data corruption.

Modernisation is needed in the context of Jogomerto Village, where traditional manual methods persist. Manual letter writing and archiving processes hinder staff efficiency. Adopting an electronic Village Administration System focused on outgoing letters can significantly improve operational efficiency. This system, accessible offline via PCs or laptops, streamlines letter creation with templates and enhances archiving capabilities. Such technical support ensures the success of electronic archives, optimising file retrieval and data security.

METHODS

This research is a Research and Development (R&D) study utilising the ADDIE model.

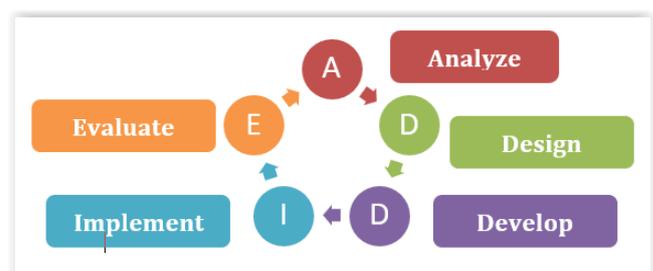


Figure 1 – Research Model

The first stage of this research was to analyse and identify problems and needs at the Jogomerto Village Office. At this stage, it was evident that administrative service staff were still using a semi-manual process for letter creation and archiving. Letter writing at the Jogomerto Village office was still performed conventionally, involving manual typing whenever a letter was needed. Additionally, filing letters was done manually by recording each piece of data in a physical book. This method carried risks such as damage from tearing, moisture, ageing, and other factors, potentially leading to the loss of recorded data. Based on the analysis, there was a clear need for a correspondence system integrated with an archive system to enhance the effectiveness and efficiency of administrative activities at the Jogomerto Village Office. This need was reinforced by facilities, including PCs and a young village head's staff.

The second stage was the design phase, in which researchers developed the system products to be created. The system was designed using the Microsoft Access application, featuring an appealing user interface and specific characteristics. The third stage was development, during which researchers created an administrative system based on Microsoft Access, following the previously designed blueprint. In this stage, product feasibility testing was performed by material experts and system experts based on predefined criteria. The subsequent step was the implementation or application of the developed system product. In this phase, the developed administrative system was implemented by nine staff members at the Jogomerto Village Office to assess its effectiveness. The final stage involved evaluation, where the system products underwent assessments, critiques, and suggestions from material experts and media experts. Additionally, the developed system product completed user trials involving the staff at the Jogomerto Village Office.

The participants in this study included two material experts, system experts, and nine users, consisting of the staff at the Jogomerto Village Office in Nganjuk Regency. Data generated in this study encompassed both quantitative and qualitative data. Quantitative data comprised questionnaire scores filled out by validators during system feasibility evaluations and user responses. Qualitative data were derived from critiques and suggestions provided by validators and users. The

data from the validation and user trials were processed using descriptive statistics.

To assess the effectiveness of archive retrieval when utilising the Village administration information system (Sistem Informasi Desa – SIADA), researchers conducted data analysis. This analysis involved testing the effectiveness of archive retrieval by calculating the Accuracy Score to establish the effectiveness criteria, following [22] methodology. The data assessed by researchers consisted of two distinct data groups, each comprising a sample of 100 data points - 50 incoming and 50 outgoing letter data. The level of accuracy in the archive retrieval process was determined by applying the Accuracy Score formula. Moreover, it was essential to ascertain the time required for the archive retrieval process to gauge the efficiency of archive retrieval. To determine the effectiveness of archive retrieval, the Accuracy Rate was calculated using the following formula [22]:

$$AK = \frac{\text{Number of archives not found}}{\text{Number of archives found}} \times 100 \quad (1)$$

The tolerance limit for the accuracy of archive retrieval is considered good, falling within the range of 0.5% to 3% [22]. However, if the calculated accuracy value falls below or equals 0.5%, it indicates a need for improvement in the archival method. Conversely, the archival process is deemed reasonably practical if the accuracy value exceeds 0.5% but remains within the 0.5% to 3% range. Records retrieval from the archive takes no more than 1 minute. On the other hand, if the accuracy value obtained is equal to or greater than 3%, it becomes necessary to revise and enhance the method employed.

RESULTS AND DISCUSSION

This research has resulted in the creation Microsoft Access-based administrative information system products. This system is accessible offline using a PC or laptop featuring an appealing menu. The menus within this administrative information system are illustrated in Figure 2.



Figure 2 – Menu in the Application System

The SIADA interface is attractively designed, featuring a vibrant colour scheme and supplemented by supporting images to enhance user-friendliness. The system's interface is illustrated in Figure 3 below.

The results of descriptive statistical analysis of the data from the validation results of material experts and system experts are presented in Table 1.

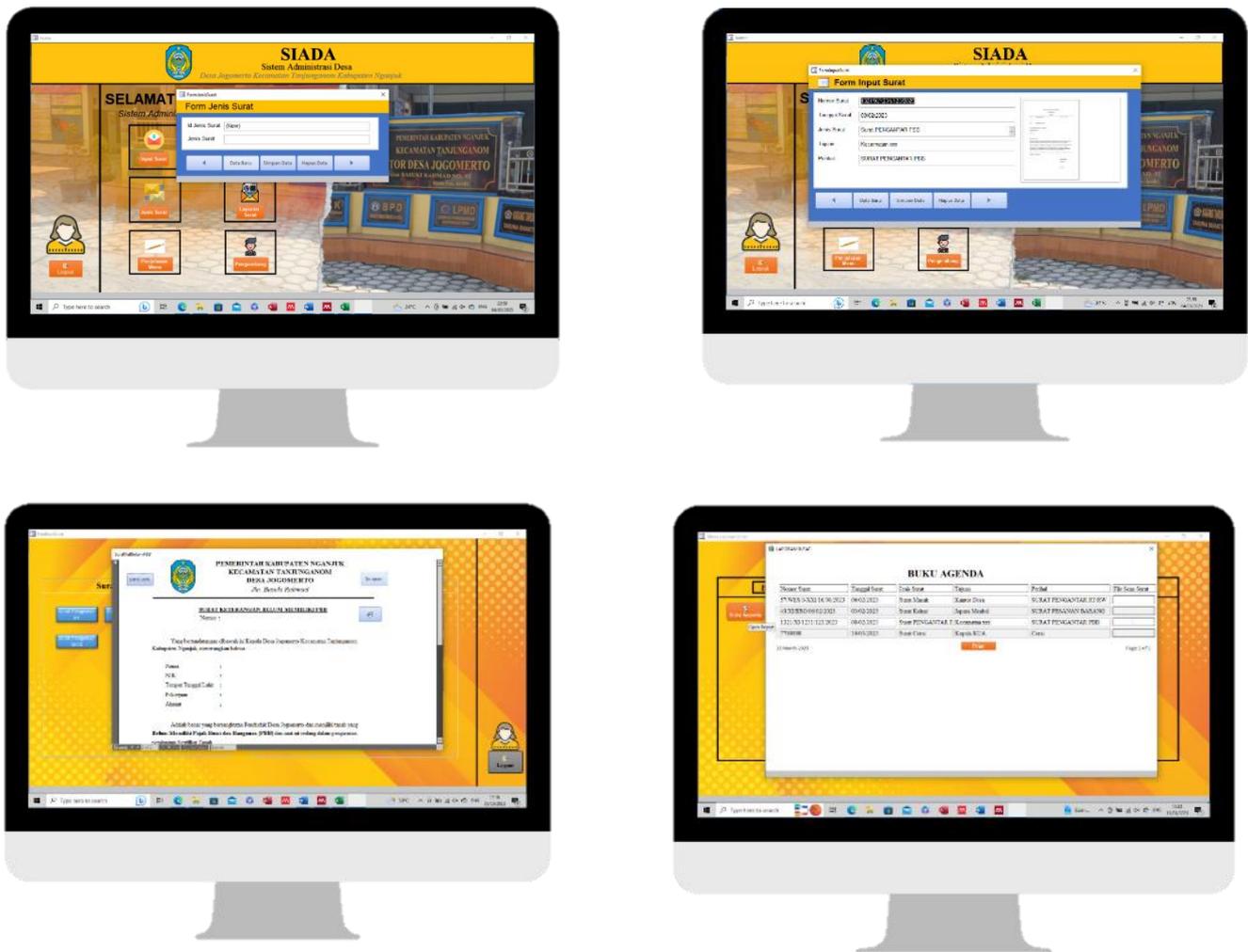


Figure 3 – System Overview

Table 1 – Product Validation Results

Validator	Aspect	Indicator	%	Criteria
Material Expert 1	Usage	Appropriateness of application name	92	Very Valid
		Appropriateness of the application to the administration system		
		Name of mail storage file		
		Clarity of instructions and commands		
	Content	Suitability of menu content to the needs	92	Very Valid
		Language used		
		Incoming mail agenda book format		
		Outgoing letter agenda book format		
Outgoing letter creation				
Completeness of letter type				

Validator	Aspect	Indicator	%	Criteria
Material Expert 2	Usage	Appropriateness of application name	94	Very Valid
		Appropriateness of the application to the administration system		
		Name of mail storage file		
		Clarity of instructions and commands		
	Content	Suitability of menu content to the needs	94	Very Valid
		Language used		
		Incoming mail agenda book format		
		Outgoing letter agenda book format		
		Outgoing letter creation		
	Completeness of letter type			
System Expert	Usage	Attractiveness of the initial appearance, content, and system icon	94	Very Valid
		Completeness of the menu		
		Menu arrangement		
		Compatibility between menus		
	Content	Font style combination	94	Very Valid
		Colour combination		
	Ease of use	Ease of menu access	94	Very Valid
		Ease of data entry		
		Ease of writing outgoing letters		
		Ease of printing letters		
Average			93,3	Very Valid

Notes: [23]

Based on Table 1, it is evident that the results of the validation conducted by material experts and system experts collectively yield an overall average of 93.3%. Consequently, it can be concluded that experts have deemed the SIADA at the Jogomerto Village Office, Nganjuk Regency, highly valid. This indicates that the SIADA product is

exceptionally suitable for use, prompting the need for testing with Jogomerto Village staff, Nganjuk Regency.

Furthermore, the data derived from the descriptive statistical analysis of user response data are presented in Table 2 as follows:

Table 2 – Product Trial Results

User	Aspect	Indicator	%	Criteria
User	Attraction	Attraction to the system	85	Very Feasible
		Ease		
	Easy to learn the system menu			
	Understand the language in the system.			
	Data entry			
	Outgoing letter creation			
	Printing letter			
	Suitability	Suitability of the system to the needs	85	Very Feasible
		Compatibility with the administration system		
		Useful in correspondence activities		
Effectiveness of the system				

Notes: [23]

Based on Table 2, it is evident that the results of the product trials exhibit an overall average of 85%. Consequently, it can be concluded that the SIADA at the Jogomerto Village Office, Nganjuk Regency, is deemed highly feasible. This means

that SIADA can be effectively used and utilised for the administrative activities carried out by the staff at the Jogomerto Village Office, Nganjuk Regency.

While testing the effectiveness of archive retrieval, the researcher requested that the Jogomerto Village Office Nganjuk Regency staff conduct a trial by utilising the search feature within SIADA. They tested the available data consisting of 30 entries for incoming and outgoing letters. The team performed the archive search based on the letter type previously inputted, aiming to complete the archive retrieval process within 3 minutes. Following the trial, it was observed that 29 out of 30 archive data entries could be located within 3 minutes, with an average search time of 6 seconds per archive entry. The one instance where data was not found was attributed to incorrect input by the SIADA staff. Subsequently, the Accuracy Score can be determined as follows:

$$AK = \frac{1}{29} \times 100\% = 0,034 \times 100\% = 3\%$$

Based on the obtained accuracy rate calculation result, which is 3, implementing the Microsoft Access-based Village Administration System (SIADA) is deemed adequate for archive retrieval in administrative activities at the Jogomerto Village Office, Nganjuk Regency [22, 24].

Table 3 – Comparison Results

Indicator	Before	After (SIADA)
Letter Creation	>5 minutes	<2 minutes
Mail Archive	>2 minutes	<1 minute
Letter Discovery	>1 minute	6 seconds

Based on the conducted trials, before using SIADA, the staff required more than 5 minutes to compose a single letter. This was due to the manual process of typing the necessary data individually. However, following the adoption of SIADA, the staff can complete the same task in less than 1 minute. This efficiency is attributed to the system's integration with a citizen identity database. When a letter is needed, the staff can open the relevant letter template and search the citizen database, and the system will automatically generate the required letter [25, 26].

The system developed by the researchers is the Village Administration Information System (SIADA), characterised by its ability to save original letter files into the archive menu and automatically classify outgoing letter data based on its type. SIADA is aesthetically designed with a

varied colour palette, complemented by supporting images, and features user-friendly menu options to enhance usability [27, 28]. The researchers have designed this system to be accessible offline via a PC or laptop, providing staff or users with ease of use without an internet connection [29, 30]. Beyond letter creation, this system includes a letter archiving menu with a built-in letter file storage feature. It is a comprehensive tool for village correspondence activities, letter handling, searching, and report generation, improving efficiency and effectiveness [10, 16]. Information system design can also yield attractive layouts to facilitate data entry [11], ensuring faster, more precise, and more accurate operations [8].

This system has been validated to determine the feasibility of the SIADA when used at the Jogomerto Village Office, Nganjuk Regency. Researchers conduct validation to know the level of success and validity of the tools that have been developed [31, 32]. Two validators completed material expert validation. The first validator is a lecturer who is an expert in administration and archives. The second validator was the Jogomerto Village Secretary, who is an expert in the field of administration and libraries in the village. Based on the content, the system is declared very feasible because it has met the criteria in the form of usability and content that suits the needs. Then, system expert validation was carried out by lecturers majoring in Educational Technology (TEP) who are experts in system development. System expert validation stated that SIADA is very feasible because it has met the assessment criteria of usability, content, and convenience. Based on the proof of material experts, system experts, and product trials by users, it shows that SIADA is very feasible to use to improve administrative staff performance at the Jogomerto Village Office, Nganjuk Regency [24, 33].

The SIADA is attractively designed with colours that are not monotonous and accompanied by supporting images that can reduce the possibility of boredom in staff so that it can motivate the team at the Jogomerto Village Office to work and improve performance in managing village administration [34, 35, 36, 37]. Based on the validation and calculations that have been carried out, the results show that the SIADA is declared very valid and effective for use at the Jogomerto Village Office, Nganjuk Regency [38, 39]. Based on the trial, before using SIADA, staff took more than 5 minutes to create a letter. Meanwhile, after us-

ing SIADA, the team can make notes in less than 1 minute because supporting infrastructure facilities can help improve employee performance [25, 40].

CONCLUSIONS

This research and development project has resulted in the creation of the SIADA designed to enhance the effectiveness of the staff at the Jogomerto Village Office in Nganjuk Regency. The system has been officially validated and deemed suitable for use in the administrative service process. Subject matter experts and system experts conducted this validation; nine users tested the system. Based on the analysis results, it can be

concluded that the SIADA can significantly improve the efficiency of the Jogomerto Village Office staff in Nganjuk Regency, as it allows for faster letter writing compared to conventional administrative systems.

The SIADA focuses explicitly on e-archiving and creating outgoing letters at the Jogomerto Village Office in the Nganjuk Regency. We hope future researchers can further develop the SIADA by introducing additional features, such as letter scanning, without needing a separate camera or external assistance. If other organisations or parties wish to implement the SIADA system, modifications to the layout and design may be necessary.

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