Web-based Administrative Information System at the Sei Sikambing B Village Office

J. Prayoga[1], Buyung Solihin Hasugian[2], Ibnu Rusydi[3]
[12]Information Systems, Faculty of Engineering and Computer Sciences,
Dharmawangsa University, Medan , Indonesia
Corresponding Email : yoga@dharmawangsa.ac.id

ABSTRACT

Administrative services at the sub-district office play an important role in supporting the effectiveness of public services. However, the manual systems that are still widely used often cause problems such as delays in processing, recording errors, and a lack of data transparency. This study aims to design and implement a web-based Administrative Information System at the Sei Sikambing B Sub-district Office to improve the efficiency and accuracy of administrative services. The system development method used is the Waterfall model, starting from needs analysis, system design, implementation, to testing. This system provides digital services for managing correspondence, population data, and document archives, featuring user login, notifications, and automatic document printing. Testing results indicate that this web-based system can accelerate administrative processes, reduce recording errors, and simplify data tracking for both staff and the public. With the implementation of this system, it is hoped that public services at the Sei Sikambing B Village Office will become more effective, transparent, and responsive to residents' needs.

Keywords: Administrative Information System, Web, Village Office, Efficiency, Public Services

INTRODUCTION

In today's digital age, the development of information technology has penetrated almost all aspects of human life, including the field of government. The Village Office, as an extension of the government at the village level, plays a vital role in providing administrative services to the community. The effectiveness and efficiency of public services are greatly influenced by the quality of administrative management at the village level. Therefore, the implementation of a technology-based administrative information system has become an urgent need to improve performance and service quality.

Although the implementation of administrative information systems offers many benefits, several challenges must be addressed. These challenges include limitations in skilled human resources in the field of information technology, resistance to change from manual to digital systems, budget constraints for infrastructure procurement and training, and the need for administrative data security from cyber threats. Overcoming these challenges requires the right strategy to ensure the effective and optimal implementation of information systems.

The implementation of a web-based administrative information system at the Sei Sikambing B Village Office is highly relevant to the demands of the times, in line with the direction of e-Government development. The expected benefits include increased efficiency in administrative processes, improved transparency and accountability of services, ease of data access by relevant parties, and improved quality of public services to the community.

LITERATURE REVIEW

The development of web-based administrative information systems at the village government level is a response to the dynamics of digital transformation in public service management. Heeks (2022) highlights that information systems in developing countries often fail to be implemented due to a lack of local adaptation and minimal technical capacity. This is also emphasized by Bwalya and Mutula (2023), who stress the importance of adopting e-government based on a socio-technical approach to improve efficiency and community participation. In the context of information management, Laudon and Laudon (2018) explain that management information systems must be able to support data-driven decision-making processes, especially in complex and dynamic government environments. Information systems designed with a structured and modular approach are highly relevant to the needs of village administrative services, which require accurate and real-time data recording, reporting, and integration.

Azhar Susanto (2023) states that the success of information systems is greatly influenced by the integration between subsystems and the ease of information auditing. In technical implementation, the use of dynamic web programming languages such as PHP and MySQL databases has proven to be flexible and economical (Nugroho, 2023; Riyanto, 2021), and can be integrated with standardized system design methods such as UML (Sugiarti, 2023). Pratama (2021) adds that modern information systems must be able to respond to organizational needs through an object-oriented approach and user needs analysis. This is further emphasized by Pressman (2022) in the concept of software engineering, which stresses the importance of iteration and system testing before full implementation. From a regulatory perspective, the Village Law (Law No. 6 of 2014) serves as the legal basis for strengthening village governance based on information systems (Tira Smart, 2017). Additionally, the use of decision-making methods such as SMART is relevant for supporting administrative selection or screening functions (Suryanto, 2021). Based on population statistics from the Central Statistics Agency (2020), administrative digitization is urgently needed to manage the ever-growing community data. Finally, software and internet literacy skills, as mentioned by Yuhefizar (2020), are an important prerequisite in supporting the sustainable use of information systems by village officials independently.

RESEARCH METHODOLOGY

Type of Research

This research uses the Research and Development (R&D) method with a qualitative descriptive approach. The aim is to develop a web-based administrative information system that can improve the effectiveness and efficiency of administrative services at the Sei Sikambing B Village Office.

Location and Time of Research

The research was conducted at the Sei Sikambing B Village Office, Medan Petisah District, Medan City. The research period ran from January to February 2025. Data Collection Techniques Data collection was conducted using the following techniques:

a. Observation: Directly observing the administrative processes at the village office to identify system requirements.

b. Interviews: Conducted with administrative staff and the village head to obtain

in-depth information about existing administrative issues.

c. Documentation Study: Collecting administrative documents such as application forms, outgoing letters, and incoming letters used at the office.

System Development Method

The system development method used is the Waterfall model, which includes the following stages:

a. Needs Analysis: Identifying user needs and system functionality.

b. System Design: Creating a system architecture design, including database and user interface designs.

c. Implementation: Creating a web application based on PHP and MySQL.

d. Testing: Testing the system using black box testing methods to ensure that all functions work as expected.

e. Deployment: Installing the system in the village office environment and training users.

Tools and Materials

a. Programming Languages: PHP, HTML, CSS, JavaScript

b. Database: MySQL

c. Web Server: Apache (using XAMPP)

d. Tools: Visual Studio Code

RESULT AND DISCUSSION

The analysis and design of the administrative information system at the Sei Sikambing B village office focuses on web-based data and correspondence administration that has been created. This application uses three users, namely users, staff, and the village head. The following image shows the web-based information system program in detail in the explanation below.

Login Page Display

This is the initial display that requires authorization to access the system. The initial login page display is the same for users, staff, and the village head. The display is shown in Figure 1 below.

Figure 1 Login

Staff Main Page Display

The admin main page has several menus that will be the staff's tasks, including managing user data, printing letters, and completed letters.
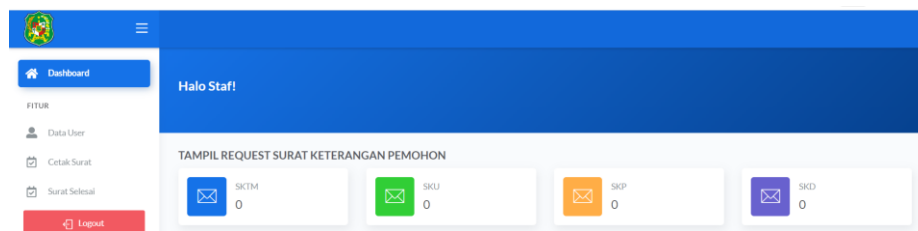
Figure 2 Staff Main Page

User Data Page Display

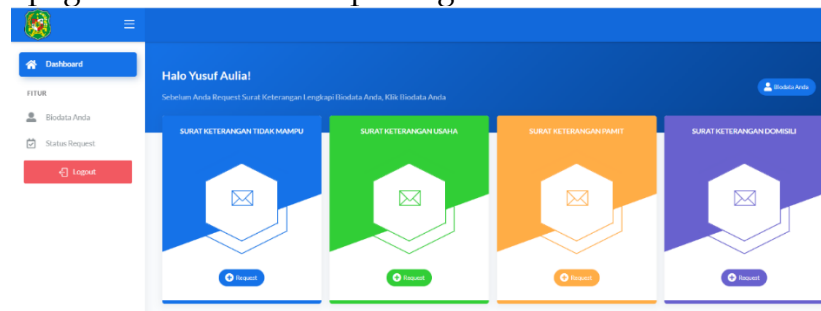The user data page is a section for inputting user data

Figure 3 User Data Page

Figure 4. SKTM Data Display

Figure 5 SKU Data Display

Figure 6. . Display of Domicile Letter Data

Figure 7 Monthly Report Display

Figure 8 Annual Report Display

CONCLUSION

Based on the results of research and development that has been conducted, it can be concluded that the implementation of a web-based Administrative Information System at the Sei Sikambing B Village Office has successfully improved the effectiveness and efficiency of administrative data management. This system facilitates the recording of incoming and outgoing correspondence, as well as the structured and computerized archiving of important documents. Additionally, the system helps expedite administrative services to the public and reduces the potential for errors in manual data management. With this system in place, administrative processes have become more transparent, easily accessible, and well-integrated across departments within the village office.

REFERENCES

Heeks, R. (2022). Information Systems and Developing Countries: Failure, Success, and Local Improvisations. The Information Society, 18(2), 101-112.

Bwalya, K. J., & Mutula, S. M. (2023). E-Government: Implementation, Adoption and Synthesis in Developing Countries.

Laudon, K. C., & Laudon, J. P. (2018). Management Information Systems: Managing the Digital Firm (15th Edition).

Azhar Susanto. 2023. *Sistem Informasi Akuntansi*. Bandung: Lingga Jaya. Badan Pusat Statistiika 2020, KonsepPenduduk

Nugroho, Bunafit, 2023, Aplikasi Pemograman Web Dinamis Dengan PHP dan MyQSL, Gava Media, Yogyakarta.

Pratama, I Putu Agus Eka, 2021, *Sistem Informasi dan Implementasinya,* Informatika, Bandung.

Pressman, Roger S, 2022, Rekayasa Perangkat Lunak Pedekatan Praktisi Tira Smart, 2017, Undang-Undang Desa UU Nomor 6 tahun 2014 Tsmart, Tangerang.

Riyanto, 2021, *Sistem Informasi Penjualan dengan PHP dan MySQL*. Yogyakarta : Penerbit Gava Media.

Sugiarti, Yuni, 2023, *Analisis & Perancangan UML (Unified Modeling Language) Generated VB.6*, Graha Ilmu, Yogyakarta.

Suryanto, Muhammad Safrizal, 2021, *Sistem Pendukung Keputusan Pemilihan Karyawan Teladan dengan Metode SMART (Simple Multi Attribute Rating Technique)*. Riau : UIN Sultan Syarif Kasim.

Yuhefizar, 2020, 10 jam Menguasai Internet : Teknologi dan Aplikasinya, Ekex Media Komputindo, Jakart