Joinforcs: Journal of informatics and information system
Volume 1, (3) 2026, p. 108-116
E-ISSN : XXXX-XXXX

Web-Based Information System for Alang-Alang Lebar Village, Alang-Alang Lebar District, Palembang

Edi Supratman [a,1,*], Iqbal Nurol Fauzi [b,2]
[a]Bina Darma University, Indonesia
[b]Sharia Ecomonomic Law, UIN Syarif Hidayatullah Jakarta, Indonesia
[1]edi_supratman@binadarma.ac.id, [2]faizundaima.@gmail.com
*corresponding author

Article Info

Article History:

Received Mar 08, 2026
Revised April 02, 2026
Accepted April 18, 2026

***Keywords*:**
District, Information System, UML, Village, Web-Based

Abstract

The rapid advancement of information technology has encouraged local governments to improve the quality of public services through the implementation of digital information systems. Based on observations conducted in Alang-Alang Lebar Village, Alang-Alang Lebar District, Palembang, the existing administrative processes are still performed manually using handwritten records and basic office applications, resulting in inefficient data management, limited accessibility, and delays in information dissemination to the public. This study aims to design and develop a web-based village information system that supports administrative services and facilitates the management and distribution of village information. The system was developed using the Waterfall software development model, which consists of the stages of requirements analysis, system design, implementation, testing, deployment, and maintenance. A structured approach was employed during the design phase by utilizing Unified Modeling Language (UML) diagrams, including use case diagrams, class diagrams, activity diagrams, and sequence diagrams, to model system requirements and processes. The application was implemented using PHP and MySQL with AppServ as the local server environment, while Dreamweaver CS5 was used as the development platform. Microsoft Visio 2010 supported system modeling and documentation, and Microsoft Office 2007 was utilized for report preparation. The resulting web-based information system provides features for managing population data, village profiles, announcements, and other administrative information. The implementation of the system is expected to improve the efficiency and accuracy of data processing, reduce manual administrative workloads, and enable faster access to information for both village officials and residents. Furthermore, the system enhances transparency, supports better public services, and promotes wider dissemination of village information, thereby contributing to the digital transformation of village governance.

Joinforcs: Journal of informatics and information system
Volume 1, (3) 2026, p. 108-116
E-ISSN : XXXX-XXXX

1. Introduction

Digital transformation has become a strategic initiative for improving organizational performance and public service quality. Previous studies indicate that digital transformation supported by information systems can significantly improve service efficiency, transparency, and organizational effectiveness in public institutions [1]. The rapid development of information and communication technology (ICT) has significantly transformed the way governments deliver public services to citizens. The implementation of digital technology has become one of the primary strategies for improving the efficiency, transparency, accountability, and accessibility of government services at both national and local levels. As society becomes increasingly dependent on digital information, public institutions are expected to provide services that are not only accurate and reliable but also easily accessible anytime and anywhere [2]. Consequently, local governments are encouraged to adopt electronic government (e-government) initiatives to enhance administrative performance and improve the quality of services provided to the public. E-government refers to the utilization of information and communication technology by government institutions to support administrative activities, improve public service delivery, increase transparency, and strengthen communication between the government and citizens. The implementation of e-government has been widely recognized as an effective solution for reducing bureaucratic complexity, accelerating administrative processes, minimizing human error, and facilitating public participation in government activities. In Indonesia, the government's commitment to digital transformation has encouraged villages and local administrative units to adopt information systems that can support more efficient governance and improve community engagement [3].

Village governments play a fundamental role as the closest level of government to the community. They are responsible for providing various administrative services, including population administration, issuance of certificates, dissemination of public information, complaint management, and coordination of community development programs [4]. Because village offices interact directly with citizens on a daily basis, the quality of their administrative services greatly influences public satisfaction. Therefore, the adoption of information technology at the village level is essential to improve operational efficiency and ensure that public services meet the increasing expectations of society [5]. One of the technological solutions that can support village administration is the implementation of a web-based village information system. A web-based information system enables village governments to manage administrative data electronically while simultaneously providing information services that are accessible to the public through the internet. Unlike conventional manual systems, web-based applications allow information to be updated in real time, stored securely in databases, and accessed remotely by authorized users. Such systems also facilitate communication between village officials and residents by providing online access to announcements, administrative requirements, village profiles, development activities, and various public services [6].

Alang-Alang Lebar Village, located in Alang-Alang Lebar District, Palembang City, is one of the villages that has considerable potential for improving its administrative services through digital transformation [7]. The village is located on Jalan Taman Murni Km. 12 and covers an area of approximately 532 hectares. Based on the latest administrative records, the village has a population of approximately 10,909 residents, consisting of 5,668 males and 5,241 females. As the population continues to grow, the volume of administrative activities and public service requests also increases, requiring a more efficient information management system capable of handling large amounts of data accurately and consistently [8].

Despite its important administrative responsibilities, the current management system in Alang-Alang Lebar Village remains largely conventional. Based on field observations, most administrative activities are still performed manually or with the assistance of general office applications such as Microsoft Word and Microsoft Excel [9]. Population data, correspondence, and administrative reports are stored in separate files that require manual updating and verification. This approach often results in duplicated records, inconsistencies in data management, longer processing times, and difficulties in retrieving information when required. As the amount of administrative data increases, the limitations of manual data processing become increasingly evident [10].

Joinforcs: Journal of informatics and information system
Volume 1, (3) 2026, p. 108-116
E-ISSN : XXXX-XXXX

Another challenge faced by the village administration concerns the dissemination of public information. Important announcements regarding village activities, government programs, public services, and administrative procedures are generally communicated through printed notices displayed on village bulletin boards. Although this method has been traditionally used for many years, it is no longer sufficient to meet the information needs of modern society [11]. Residents must physically visit the village office to obtain updated information, making the communication process inefficient, especially for citizens who live far from the office or have limited time to visit during working hours. Consequently, information often reaches residents late, reducing the effectiveness of government communication. The administrative service process also presents several inefficiencies [12]. Residents requesting population-related documents, such as domicile certificates, family certificates, introduction letters, or other administrative documents, are generally required to visit the village office multiple times to obtain information, submit required documents, verify application status, and collect completed documents. These manual procedures consume considerable time for both citizens and village staff. Furthermore, officers must repeatedly verify paper documents and manually search administrative records, increasing the likelihood of human error and delaying service completion [13].

The absence of an integrated information system also affects data accuracy and security. Manual data storage methods are vulnerable to document loss, physical damage, duplication, and inconsistencies between administrative records [14]. Since information is stored in multiple files and folders without centralized database management, updating data becomes increasingly difficult as the number of residents grows. Moreover, generating statistical reports for village planning, budgeting, and decision-making requires additional manual work that consumes valuable administrative resources. Considering these challenges, the implementation of a web-based village information system represents an effective solution for improving administrative performance in Alang-Alang Lebar Village. Through an integrated database, administrative data can be stored systematically, updated efficiently, and retrieved quickly whenever needed [15]. Village officials can manage population data, administrative documents, public announcements, and complaint reports within a centralized platform, reducing repetitive work and improving operational efficiency. At the same time, residents can obtain information regarding village profiles, administrative procedures, public announcements, and service requirements through an online platform without needing to visit the village office solely to seek information [16].

In addition to improving administrative efficiency, a web-based information system also contributes to transparency and accountability in local governance. Citizens can access updated information concerning village programs, public services, development activities, and government announcements at any time. The availability of accurate and timely information strengthens public trust in government institutions while encouraging greater community participation in village development. Furthermore, digital documentation simplifies monitoring, reporting, and evaluation processes, enabling village leaders to make more informed decisions based on accurate and up-to-date data [17]. The development of such a system requires a systematic software engineering approach to ensure that user requirements are properly identified and implemented. Therefore, this study adopts the Waterfall software development model, which consists of requirement analysis, system design, implementation, testing, deployment, and maintenance. The Waterfall model is selected because it provides a structured and sequential development process suitable for projects with clearly defined requirements. During the system design stage, Unified Modeling Language (UML) is employed to model system functionality through use case diagrams, class diagrams, activity diagrams, and sequence diagrams [18]. These modeling techniques help visualize system processes, user interactions, and database structures before implementation.

The system is implemented using PHP as the programming language and MySQL as the database management system, supported by the AppServ server environment. Dreamweaver CS5 is utilized for interface development, while Microsoft Visio assists in system modeling and documentation. The resulting application is expected to provide comprehensive features for managing population administration, village profiles, public announcements, complaint submissions, and administrative service information. Therefore, this study aims to design and develop a web-based Village Information System for Alang-Alang Lebar Village, Alang-Alang Lebar District, Palembang. The proposed system is expected to improve the

Joinforcs: Journal of informatics and information system
Volume 1, (3) 2026, p. 108-116
E-ISSN : XXXX-XXXX

efficiency of administrative processes, facilitate population data management, accelerate public service delivery, enhance information dissemination, and strengthen communication between the village government and the community [19].

2. Research Methodology

In this part, the author divides the sequence of activities into three parts, namely process design with UML which consists of four diagrams (use case diagram, class diagram, activity diagram, and sequence diagram), database design and website page design.

2.1 Use Case Diagram

A use case diagram is a diagram that shows all the main processes that make up the entire system, this diagram can be seen in the image below:

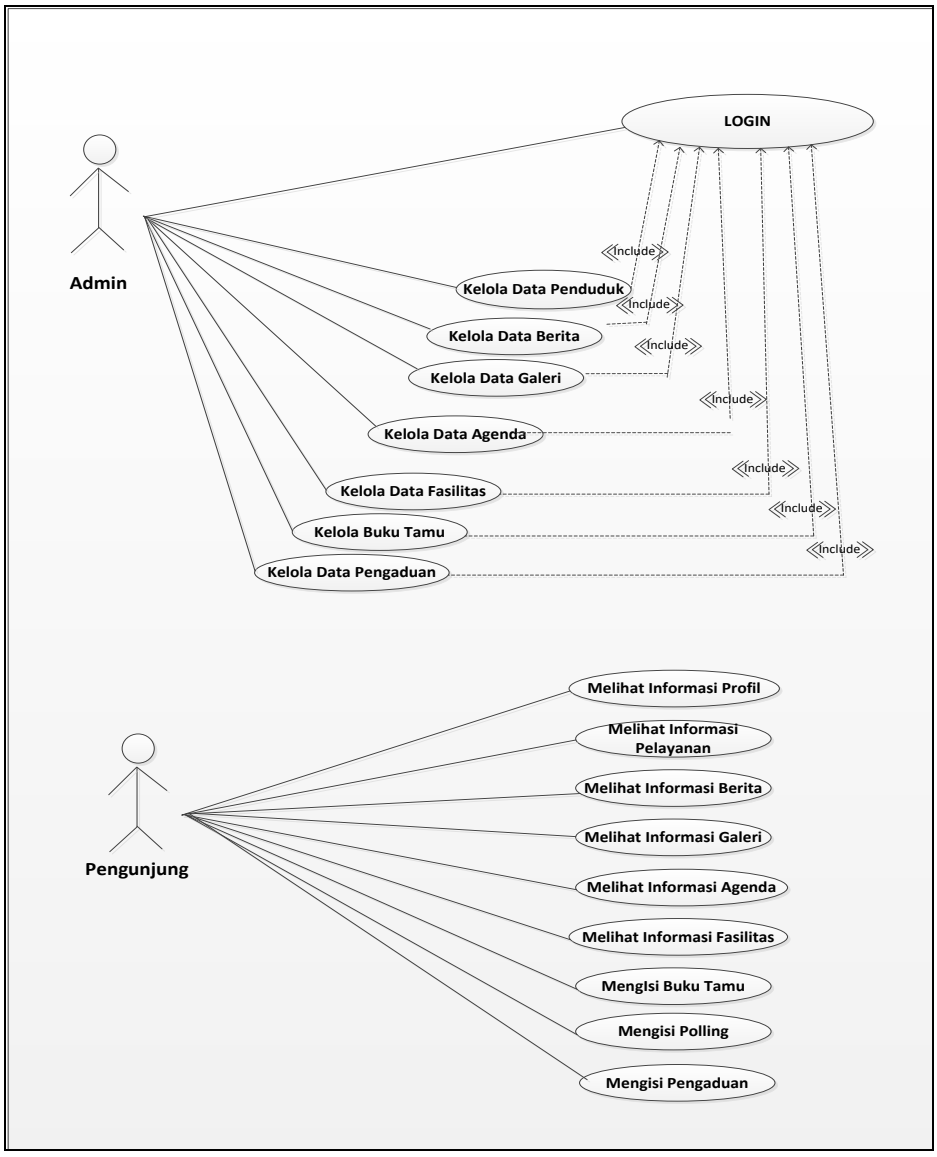

Figure 1. *Use Case Diagram*

Based on the use case image, the description of the actors, actors cast and scenario can be explained.

Joinforcs: Journal of informatics and information system
Volume 1, (3) 2026, p. 108-116
E-ISSN : XXXX-XXXX

3.2. Class Diagram

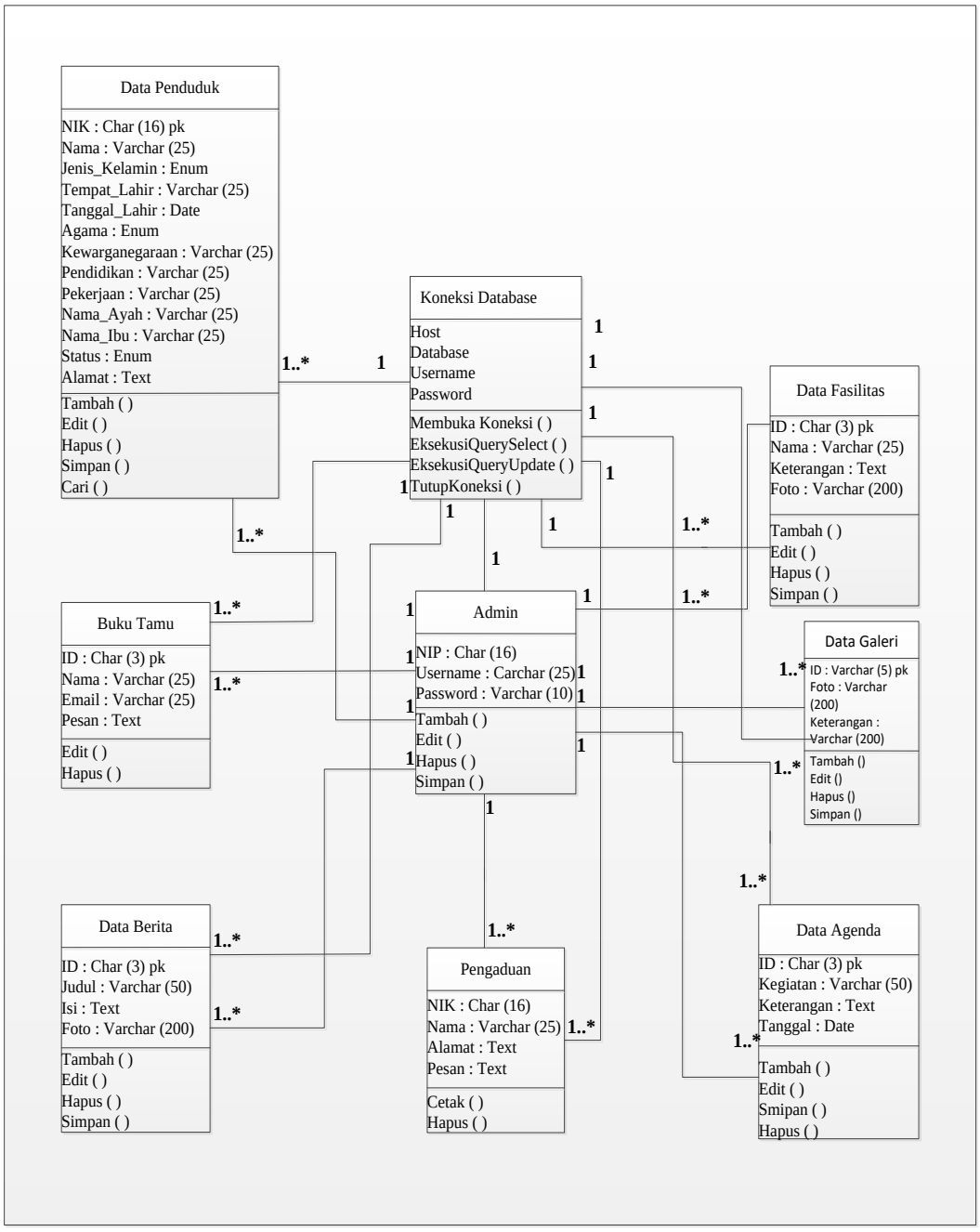

Figure 2. *Class Diagram*

3. Result and Discussion

3.1. Result

After designing and creating the program, the final result that the researcher will achieve is a Web Based Information System for Alang-Alang Lebar Village, Alang-Alang Lebar District, Palembang using the PHP programming language and MySQL database.

Joinforcs: Journal of informatics and information system
Volume 1, (3) 2026, p. 108-116
E-ISSN : XXXX-XXXX

3.2. Discussion

To run PHP programming applications, use the freeware program Apache Friends. The steps to run it are as follows:

3.2.1.Home Page

The home menu process is a program that has been created to explain the program further. On the home menu there are 8 information buttons: Home, Profile, Gallery, Facilities, Services, Complaints, Guest Book, and Agenda. The home page display of Alang-Alang Lebar Village, Alang-Alang Lebar District, Palembang is as follows:

Figure 3. Homepage of Alang Alang Lebar Sub-district

3.2.2.Admin Page

The admin homepage is a special admin page consisting of the admin edit menu, add admin, manage agenda, manage gallery, manage resident data, manage guest book, manage complaints, manage facilities, manage news, and logout. The admin homepage display is as follows:

Joinforcs: Journal of informatics and information system
Volume 1, (3) 2026, p. 108-116
E-ISSN : XXXX-XXXX

Admin Page Manage News Data

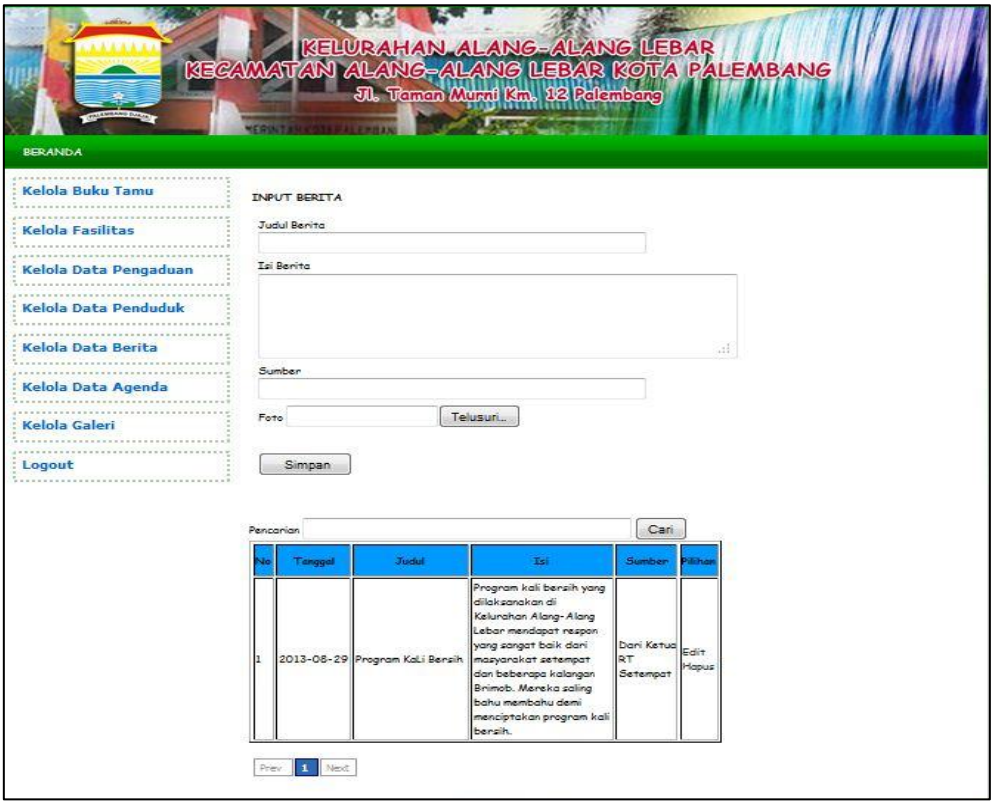

Figure 4. Admin Page Manage News Data

The Figure 4. Shows the News Management page of a web-based Village Information System developed for Alang-Alang Lebar Village, Alang-Alang Lebar District, Palembang**.** This interface is designed to allow village administrators to create, manage, and publish news and announcements through the village website. At the top of the page, there is a header displaying the official identity of Alang-Alang Lebar Village, including its name, district, and location. On the left side, a navigation menu provides access to several administrative modules, including Guest Book Management**,** Facility Management**,** Complaint Management**,** Population Data Management**,** News Management**,** Agenda Management**,** Gallery Management, and Logout**.** This menu enables administrators to easily navigate between different system functions.

The main content area contains a news input form where administrators can enter the news title, write the news content, specify the information source, and upload an image related to the news article using the file upload feature. After completing the required information, the administrator can save the news by clicking the Save button. Below the input form, the system provides a search feature that allows administrators to quickly locate existing news articles. A table is displayed to present the stored news records, including columns such as the publication date, news title, content summary, source, and available actions for managing each record. This feature enables administrators to review, edit, or organize published news efficiently.

Overall, this interface demonstrates how the web-based Village Information System supports the digital management of village information. By providing an integrated platform for publishing announcements and news, the system improves the efficiency of information dissemination, ensures that residents receive timely updates, and enhances transparency and communication between the village government and the community.

Joinforcs: Journal of informatics and information system
Volume 1, (3) 2026, p. 108-116
E-ISSN : XXXX-XXXX

4. Conclusion

Based on the analysis, design, implementation, and testing of the web-based information system for Alang-Alang Lebar Sub-district, Palembang, several conclusions can be drawn. First, the developed system successfully provides a web-based platform that facilitates the dissemination of information related to the sub-district profile, public services, community activities, announcements, and complaint management. The system serves as an effective medium for delivering information to the community in a faster, more accurate, and more accessible manner compared to conventional methods. Second, the information system includes an administrative module that enables authorized personnel to manage data efficiently through functions such as adding, editing, updating, and deleting information. This feature simplifies the management of population-related information, news, service announcements, and public complaints, thereby reducing administrative workload and improving data organizationn. Third, the implementation of the system contributes to improving the quality of public services by providing residents with easy access to information regarding administrative procedures and sub-district services. Citizens can obtain updated information without having to visit the sub-district office directly, resulting in greater efficiency in information dissemination and service delivery. Furthermore, the system enhances transparency, accountability, and communication between the local government and the community.

Overall, the web-based information system has demonstrated its potential to support digital governance initiatives within Alang-Alang Lebar Sub-district and can serve as a foundation for future improvements in public administration and community services. Based on the results of this study, several recommendations are proposed to improve the utilization and future development of the system. (a). To ensure effective implementation and operation of the web-based information system, training programs should be conducted for sub-district employees and administrators. Such training will help users understand system functionalities, improve technical skills, and maximize the benefits of the application in daily administrative activities. (b) Regular maintenance and system monitoring should be performed to ensure data accuracy, system security, and operational reliability. Periodic updates are necessary to address potential technical issues and adapt the system to evolving organizational requirements. (c) Future development of the system may include additional features such as online administrative service requests, electronic document generation, SMS and email notifications, online complaint tracking, and integration with population administration databases. These enhancements would further improve service efficiency and user convenience. (d) Considering the continuous advancement of information and communication technology, the system should be developed using scalable technologies that allow future expansion and integration with broader e-government initiatives at the municipal or provincial level.

Future researchers are encouraged to evaluate the system from the perspectives of usability, user satisfaction, and service quality in order to identify areas for improvement and measure the impact of the system on public service performance. By implementing these recommendations, the Alang-Alang Lebar Sub-district Information System can continue to evolve and provide greater benefits to both government administrators and the community it serves.

REFERENCES

[1] M. Sobri, M. T. Ijab, and N. Mat Nayan, “Usability Evaluation of Heart Disease Monitoring Mobile Applications: A Comparative Study,” in Advances in Visual Informatics, Springer, Cham, 2019, pp. 653–662.

[2] D. M. Sihotang, A. N. Hidayanto, and S. Kurnia, "The e-government adoption ecosystem from the perspective of stakeholder theory: A case study on the village information systems in Indonesia," *Information Development*, vol. 41, no. 4, pp. 1342–1355, 2023. doi: https://doi.org/10.1177/02666669231192879.

[3] United Nations, *United Nations E-Government Survey 2024: Accelerating Digital Transformation for Sustainable Development*, United Nations, New York, 2024.

[4] OECD, *Digital Government Index 2023: Results and Key Findings*, OECD Publishing, Paris, 2023.

[5] World Bank, *GovTech Maturity Index 2022: The State of Public Sector Digital Transformation*, World Bank, Washington DC, 2022.
[6] M. Garonga and S. Padang, "Digital Transformation of the Village Correspondence Information System (SIPDES) in Supporting Good Village Governance: A Case Study of La'bo' Village," *Jurnal Sistem Informasi Bisnis*, vol. 15, no. 4, pp. 496–503, 2025.
[7] F. Ferdiansyah, A. H. Anshor, and E. Widodo, "Implementation of a Web-Based Village Information System Using the Waterfall Method in Hegarmukti Village," *International Journal Software Engineering and Computer Science*, vol. 4, no. 2, pp. 566–575, 2024. https://doi.org/10.35870/ijsecs.v4i2.2986
[8] F. S. Hidayat, A. A. Hendriadi, and A. A. Ridha, "Rancang Bangun Sistem Informasi Administrasi Desa Berbasis Web dengan Pendekatan Waterfall," *Jurnal Ilmiah Informatika Global*, vol. 16, no. 2, 2025. https://doi.org/10.36982/jiig.v16i2.5473
[9] N. Fadhilah, H. Kurniawan, and N. Mayasari, "Sistem Informasi Pelayanan Publik Berbasis Web Menggunakan Metode Waterfall pada Desa Sei Lumut," *Syntax: Journal of Software Engineering, Computer Science and Information Technology*, vol. 6, no. 1, 2025. https://doi.org/10.46576/syntax.v6i1.6487
[10] I. Puansah, "Bibliometric Analysis of Public Service Digitalization in Villages: Mapping Trends and Collaboration Networks," *Khazanah Sosial*, vol. 7, no. 4, 2025. https://doi.org/10.15575/ks.v7i4.49014
[11] M. I. Pinem, Chandra, and Hendri, "Design of Village Administrative Information System at Suka Makmur Village Using the Waterfall Method," *Journal of Artificial Intelligence and Engineering Applications*, vol. 5, no. 1, 2025. https://doi.org/10.59934/jaiea.v5i1.1391
[12] Government of Indonesia, *Law No. 6 of 2014 concerning Villages*, Jakarta, Indonesia.
[13] Government of Indonesia, *Presidential Regulation No. 95 of 2018 concerning Electronic-Based Government System (SPBE)*.
[14] R. S. Pressman and B. R. Maxim, *Software Engineering: A Practitioner's Approach*, 9th ed., McGraw-Hill, 2020.
[15] I. Sommerville, *Software Engineering*, 10th ed., Pearson, 2016.
[16] A. Dennis, B. H. Wixom, and D. Tegarden, *Systems Analysis and Design: An Object-Oriented Approach with UML*, 6th ed., Wiley, 2020.
[17] Object Management Group (OMG), *Unified Modeling Language (UML) Version 2.5.1 Specification*, 2017. https://doi.org/10.1016/B978-1-78548-171-0.50001-3
[18] T. Erl, *Digital Transformation: A Roadmap for Billion-Dollar Organizations*, Pearson, 2021.
[19] M. Unterkalmsteiner et al., "Evaluation and Measurement of Software Process Improvement: A Systematic Literature Review," 2023.