

Integrated Web Mobile Information System for Optimizing Administrative Management of Roudatul Jannah Islamic Boarding School

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Abstract

Purpose: This study analyzes the optimization of Islamic boarding school administrative management through an integrated information system to improve service effectiveness, data accuracy, and administrative efficiency.

Research Methodology: This study applies the System Development Life Cycle (SDLC), including planning, requirements analysis, design, implementation, testing, and maintenance. Data were collected through observations, interviews, and documentation.

Results: The integrated web-mobile information system successfully met all functional requirements based on Black Box Testing and received positive user evaluations for usability and accessibility. The system improved data processing, information accuracy, reporting, transparency, and administrative services while supporting better monitoring and decision-making.

Conclusion: The implementation of the integrated web-mobile information system effectively enhanced the efficiency and quality of administrative management at the Roudatul Jannah Islamic Boarding School, demonstrating its potential as a practical digital solution for Islamic boarding school administration.

Limitations: The study was conducted in a single Islamic boarding school, limiting the generalizability of the findings.

Contribution: This study proposes an integrated administrative information system model that supports the digital transformation and effectiveness of Islamic boarding school administration.

Keywords: *Administrative Management, Integrated Information System, Islamic Boarding School, Mobile Web, SDLC*

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1. Introduction

The development of information technology in the digital era has brought significant changes to various sectors, including education and religious institution management. As traditional Islamic educational institutions, Islamic boarding schools must adapt to technological developments to improve the quality of their services and the effectiveness of their administrative management. Good

administration is a crucial factor in supporting the smooth operation of Islamic boarding schools, from student data management, financial management, academic management, attendance management, and document archiving. However, many Islamic boarding schools still operate manually, creating various challenges in data management and administrative service.

Manual administrative management often leads to recording errors, data duplication, delays in information delivery and difficulties in document retrieval. Furthermore, the use of paper-based archives carries the risk of data loss and requires significant time to process the information. This condition reduces the effectiveness of administrative services and hinders the decision-making process of Islamic boarding school managers. Amid the increasing need for speed and accuracy of information, conventional administrative systems are considered inadequate to meet the demands of modern and efficient educational institution management. Digital transformation through the implementation of an integrated information system is one solution that can address various administrative problems in Islamic boarding schools ([Putri et al., 2023](#)).

An integrated information system enables all data and administrative activities to be connected on a single platform, making data management faster, more accurate, and easier to access. With this system, Islamic boarding school managers can monitor administration in real time, increase transparency in data management, and facilitate the effective and efficient preparation of administrative reports. The implementation of an integrated information system can also improve the quality of service to students, guardians, and internal Islamic boarding school parties. Administrative payment processes, attendance, academic grade management, and letter archiving can be performed digitally, reducing the use of physical documents and minimizing human error. In addition, the use of information technology can support faster decision-making processes because the required data can be obtained accurately and in a structured manner ([Pancheekha & Harrelson, 2024](#)).

While much research has been conducted on administrative information systems in educational institutions, research specifically addressing the optimization of Islamic boarding school administrative management through integrated information systems remains relatively limited. The suboptimal implementation of information systems tailored to the characteristics and needs of Islamic boarding schools presents a challenge to achieving effective, efficient, and modern administrative governance. However, Islamic boarding schools have distinct management characteristics compared to other formal educational institutions, both in terms of organizational culture, learning systems, and administrative governance. Therefore, research is needed to provide solutions for developing administrative systems tailored to the needs and conditions of Islamic boarding schools.

Based on these problems, this study focuses on optimizing the administrative management of Islamic boarding schools through the development of an integrated information system using the System Development Life Cycle method. This method was chosen because it provides a systematic system development process, from planning and needs analysis to design, implementation, testing, and maintenance of the system. This study is expected to produce an administrative information system that can improve the effectiveness, efficiency, and quality of Islamic boarding school administrative governance as a whole ([Saifudin, Saputra, Saputra, Subhan, & Maulana, 2022](#)).

Several previous studies have developed information systems to support the administration of pesantren. Most of these studies focus on digitizing specific modules, such as student administration, payment systems, academic systems, or financial management, in isolation. While other studies have implemented web-based information systems to enhance administrative service efficiency, they generally fail to integrate all administrative processes into a single platform accessible across various devices, particularly mobile ones. Furthermore, most research prioritizes system implementation over comprehensive system design based on systematic software development ([Soam, BS, Balasani, Marwaha, Kumar, & Agrawal, 2023](#)).

The research gap lies in the limited development of administrative information systems for pesantren that can integrate various administrative functions, such as student data management, academics,

finance, correspondence, and reporting, into a single web-mobile-based system. Furthermore, few studies have developed such systems using a comprehensive System Development Life Cycle (SDLC) approach that ensures that every stage of development, from requirements analysis to system maintenance, is carried out systematically and well documented. Addressing this gap, the novelty of this research lies in the development of an Integrated Web-Mobile Information System that consolidates all administrative processes of the Roudatul Jannah Islamic Boarding School into a single web-mobile digital platform. The developed system supports the management of student administration, academics, and finances and integrates correspondence, reporting, and user access rights tailored to specific roles. Furthermore, this study employs the System Development Life Cycle (SDLC) methodology as a development framework, resulting in a system that is more structured, well documented, and easily scalable for future development ([Enterprise, 2023](#)).

The contribution of this research is the development of an information system capable of enhancing the effectiveness and efficiency of administrative management, accelerating service processes, improving data accuracy, simplifying report preparation, and supporting data-driven decision-making by the management of the Roudatul Jannah Islamic Boarding School. Based on the foregoing, this study aims to develop and implement an integrated web-mobile information system to optimize administrative management at the Roudatul Jannah Islamic Boarding School. The system is expected to integrate all administrative processes into a single digital platform, thereby enhancing the effectiveness of administrative services, data management efficiency, and information accuracy, while supporting more modern, transparent, and sustainable governance of boarding schools.

2. Literature Review

Digital transformation has become a strategy for improving the effectiveness and efficiency of administration in educational institutions. According to [Andriani, Suwitri, and Yuniningsih \(2023\)](#), an integrated information system can improve organizational performance through accurate, centralized, and easily accessible data management. In addition, [Fabrienne, Fitri, and Fauziah \(2022\)](#) explained that the System Development Life Cycle (SDLC) method provides a structured system development process that produces software that meets user needs. Some previous studies have developed information systems for Islamic boarding schools.

[Aini, Harun, and Wigandi \(2023\)](#) showed that a web-based information system can improve the efficiency of administration management, but it is still limited to basic administration digitization. Next, [Sabarno, Hidayat, Wildan, Fajar, and Arisantoso \(2025\)](#) developed a web-based student administration system that successfully improved the quality of administrative services, but has not yet integrated academic, financial, and reporting modules. [Sandhyavitri, Sukma, Putra, Aditya, Firdaus, Hutagalun, Kamala, and Cahyandra \(2024\)](#) developed a web-based boarding school information system that integrates several operational modules, but it does not yet support mobile web access optimally. [Natavia, Azainil, Haeruddin, and Buhari \(2025\)](#) developed an integrated management information system that improves administrative coordination, but the system's usability and user acceptance have not yet been fully evaluated.

Based on these studies, it can be concluded that information systems can improve the quality of pesantren administration. However, most research still focuses on specific administrative functions and has not integrated all administrative processes into a comprehensive system. In addition, evaluations of the system's effectiveness and user acceptance are still limited. Therefore, this study developed a Mobile Web-Based Integrated Information System using the SDLC method that integrates student administration, academics, finance, correspondence, and reporting into one platform. The developed system was also validated through functional testing and user evaluation; therefore, it is expected to contribute to improving the effectiveness, efficiency, and quality of administrative management at Roudatul Jannah Islamic Boarding School.

2.1 Information System

From these expert definitions, it is concluded that an information system is a collection of interconnected elements that interact to facilitate decision-making and create new products,

organizing a system within an organization to achieve more effective and efficient goals (1) The components of an information system include: Hardware; (2) Software; (3) Telecommunications networks; (4) Databases; (5) Human resources; (6) Procedures or processes. Management Information System is the use of information technology, people, and business processes to record, store and process data to produce data-driven information that helps managers to derive decisions for the organizations. A Management Information System is a framework or structure consisting of software, hardware, procedures, and personnel working together to collect, store, manage, and present relevant information to leaders and managers within an organization to support effective decision-making processes ([Mutoffar, Bahar, & Mustafa, 2024](#); [Husnul, Nurhatisyah, & Friadi, 2022](#)). The development of a web-based sales system is able to automate transaction and stock recording, thereby reducing manual errors and speeding up the creation of sales reports ([Mulyati, Rahman, Hapipah, Bagus, Wahidar, & Saifudin, 2023](#)).

2.2 Islamic Boarding School Administration Management

Administrative management is the process of planning, organizing, implementing, and supervising all administrative activities to achieve organizational goals efficiently. In the context of Islamic boarding schools, the administration plays a crucial role in supporting the management of student data, academics, finances, and institutional services ([Lutfiyah et al., 2025](#)). Terry, management is a process consisting of planning, organizing, motivating, and controlling to achieve organizational goals through optimal resource utilization.

The implementation of good administrative management improves the quality of service and operational effectiveness of educational institutions ([Wijayanti and Wicaksana, 2023](#)). Islamic educational institutions, such as Islamic boarding schools (*pesantren*), have unique management systems that require structured and integrated administrative management. Manual administration often results in information delays, recording errors, and low efficiency. Therefore, innovations in information technology-based administrative management are needed to support the digital transformation of Islamic boarding schools [Rini et al. \(2025\)](#).

2.3 Integrated Information System

An integrated information system connects various processes and data on a single platform to simplify comprehensive information management. [Magdalena et al. \(2025\)](#). An information system is a combination of information technology, work procedures, people, and data used to support organizational decision making and control. Implementing an integrated information system in educational institutions can improve administrative effectiveness, accelerate data processing, and facilitate information access. This system can also reduce the use of physical documents and increase transparency in administrative management processes. An integrated information system can be used in Islamic boarding schools to digitally manage student data, payments, attendance, academic records, and administrative archives [Ropik and Rosadi \(2025\)](#).

2.4 Digital Transformation in Education

Digital transformation is the process of utilizing digital technology to improve service quality and organizational efficiency. In the education sector, digital transformation is a critical need to support effective learning and administration ([Ahyani & Dhuhani, 2024](#)). The use of digital-based information systems can increase the speed of information access, work efficiency, and the quality of educational services ([Rismawati, Ibrahim, Kartika, & Arifudin, 2024](#)). As religious-based educational institutions, Islamic boarding schools are also required to adapt to technological developments. Implementing an administrative information system is a strategic step in increasing the competitiveness and professionalism of Islamic boarding school management in the digital era [Alfauzi and Faslah \(2025\)](#).

2.5 Administrative Digitalization

Digitization is the process of transforming manual systems into digital technology-based systems. Administrative digitization enables data management processes to be carried out electronically, thereby increasing the effectiveness and efficiency of an organization's work ([Yusman, Putra, & Sinaga, 2024](#)). The benefits of administrative digitization include accelerating service delivery, reducing paper use, improving data accuracy, facilitating document retrieval, and supporting

administrative transparency. [Beaty and Oktarina \(2025\)](#) define administrative digitization as the process of utilizing information technology to transform previously manual administrative activities into digital-based systems.

Administrative digitization aims to improve the efficiency, effectiveness, accuracy, transparency, and quality of organizational service. Through the implementation of an integrated information system, various administrative processes, such as data management, document archiving, reporting, and information services, can be carried out more quickly and accurately. In the context of Islamic boarding schools, administrative digitization plays a crucial role in supporting the management of student data, academic data, financial data, and institutional administration, thereby improving the overall quality of organizational governance [Laudon and Laudon \(2022\)](#).

2.6 Technology Web Mobile

Web Mobile is a web-based application that can be accessed via mobile devices, such as smartphones and tablets, using an Internet browser without the need to install a special application ([Putra et al., 2023](#)). Mobile web applications are designed to provide an optimal user experience across various screen sizes and devices ([Utami and Priyambodo, 2025](#)). The characteristics of mobile web are responsive design, cross-platform, easy access via the Internet, flexibility and light weight, and support for real-time access. A website is a collection of pages used to display information, moving images, sound or a combination of all of these, whether static or dynamic, each connected by links [Muzakkir et al. \(2025\)](#). From the definition above, it can be concluded that a website is a page on the Internet that functions as a data or information storage in the form of text, images, animations, sound, and video that are connected by links.

Mobile web technology is a web-based information system development technology that can be accessed via mobile devices, such as smartphones, tablets, and computers, using the Internet. This technology allows users to access information and services flexibly without being limited by location or time. In the context of organizational information systems, mobile web plays a critical role in improving accessibility, operational efficiency, speeding up information delivery, and supporting real-time decision-making processes ([Pressman and Maxim, 2021](#)). PHP is an open-source server-side web-based programming language. PHP is a script that is integrated with HTML and is located on the server. PHP is a programming language that is often used to create web-based applications for web-based programming ([Noviana, 2022](#)).

According to [Suli and Nirsal \(2023\)](#), from the understanding of the experts above, it can be concluded that PHP is a very important programming language that is always used in creating various applications and is a web-based programming language that is very useful for developing various kinds of programs that are needed or for those who want to create new applications. HTML is the most basic markup language for creating website designs equipped with a visual editor ([Amalia and Rojabi, 2026](#)). HTML is a structured programming language developed to create web pages that can be accessed or displayed using a web browser ([Saputro et al., 2024](#)). From the above understanding, it can be concluded that HTML is a very basic programming language for running an application that we want and is a structured programming language that can design our website so that when it is displayed, it becomes attractive, so that with the existing design, it makes users more impressed. HTML (HyperText Markup Language) is a standard markup language used to structure web pages and applications.

3. Methodology

3.1 UML (Unified Modelling Language)

The system workflow that has been created in this research where there are three actors who can access the menu in the system where the three actors are Admin, Admin Staff and Administration Staff, each of whom has its own access to log into this administration system where the admin is a user who has full access rights to the system then the admin staff user who is responsible for carrying out administrative tasks in the system while the financial staff user who is responsible for managing the finances in the system

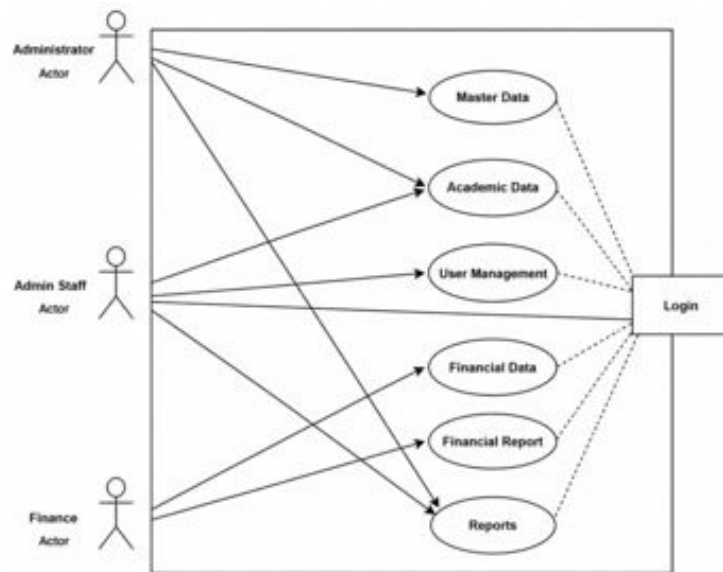


Figure 1. System workflow

The following Figure 1 shows the Use Case Diagram of a Mobile Web-Based Integrated Information System for Optimizing the Administrative Management of the Roudatul Jannah Islamic Boarding School. This diagram illustrates the interaction between system users (Administrator, Admin Staff, and Finance) and the various functions available in the system. Each actor has different access rights according to their duties and responsibilities, including master data management, academic data, user management, financial data, financial reports, and general reporting. The entire process begins with a login mechanism as a form of user authentication to ensure security and an integrated data management. The following is an image of several table relations contained in the database that will be used.

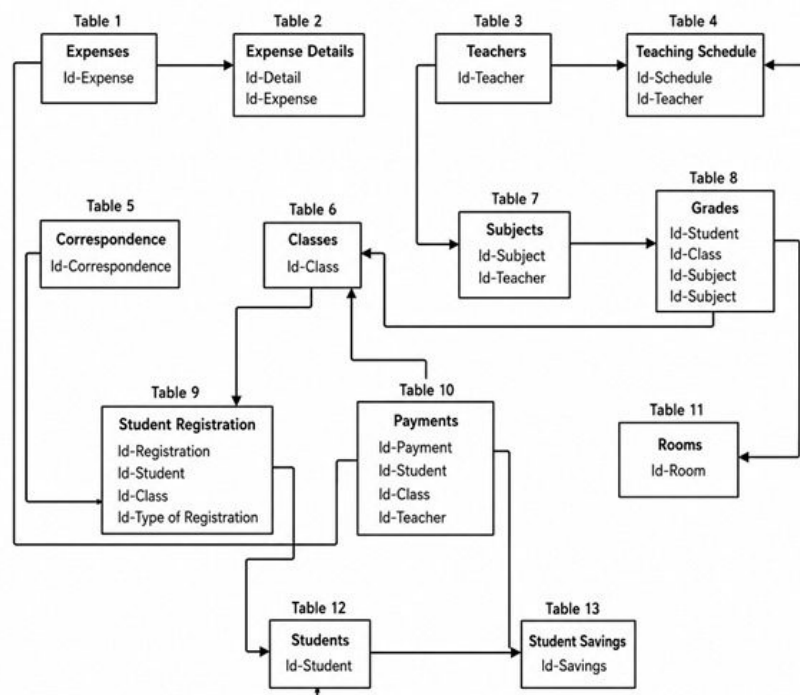


Figure 2. Table relations

The following Figure 2 shows the Entity Relationship Diagram (ERD) of the Mobile Web-Based Integrated Information System for Optimizing the Administrative Management of the Roudatul Jannah Islamic Boarding School. The ERD illustrates the database structure used in the system and the relationships between entities that support the Islamic boarding school's administrative processes. The entities involved include student data, registration, classes, subjects, teaching schedules, grades, payments, student savings, correspondence, expenses, and financial reports. The relationships between entities are designed in an integrated manner to ensure data consistency, facilitate information management, and support the effectiveness and efficiency of administrative processes within Islamic boarding schools.

This use case diagram shows several steps for the admin to access the menu in the Islamic boarding school administration system.

3.1.1 Admin Use Case Diagram

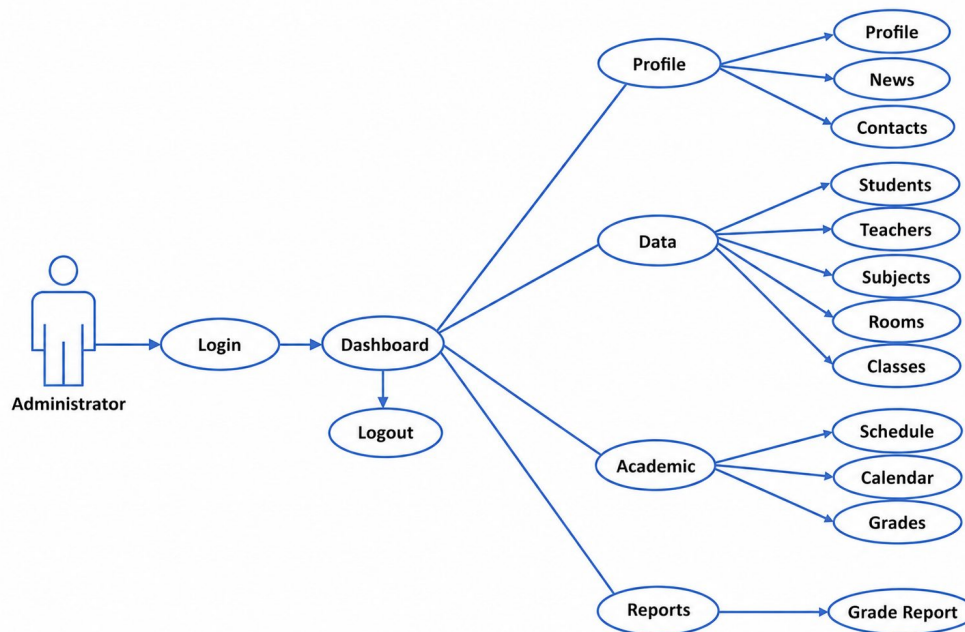


Figure 3. Admin use case diagram

The Figure 3 shows the navigation structure of the system and administrator access rights. Administrators must log in to access the dashboard, which serves as the management center of the system. From the dashboard, administrators can manage several main modules: 1) Profile, which consists of the Profile, News, and Contacts menus; 2) Data, which includes the management of Students, Teachers, Subjects, Rooms, and Classes. 3) Academic, which includes schedules, calendars, and grades. 4) Reports, which are used to view and print Grade Reports. 5) Logout, which ends the system session. This structure demonstrates that administrators have full access rights to all modules in the system, enabling them to manage data, academics, information, and reports in an integrated manner to support the effective administration of the Roudatul Jannah Islamic Boarding School.

The admin use case diagram above shows several accesses that can be performed by the admin in managing the Islamic boarding school administration system that has been built, starting from admin login to the profile, data, academic, and report menus. The several menus above show different commands in an admin administration dashboard, so that the admin is fully responsible for carrying out various student information as well as inputting student data, ustadz data, academic data, payment data, room data, schedules, and value reports that are available in the admin menu.

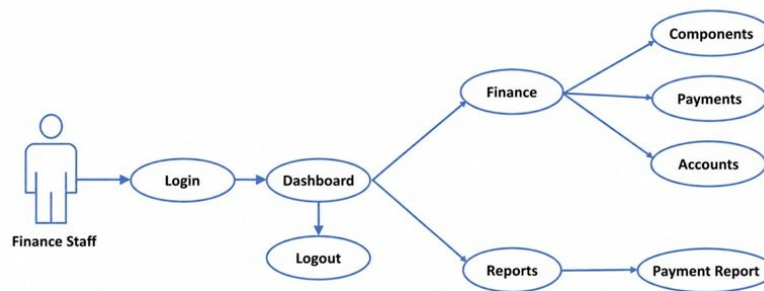


Figure 4. Financial use case diagram

The Figure 4 shows the navigation structure and access rights for Finance Staff within the system. Users must first log in to access the dashboard, which serves as the center for managing financial data. From the dashboard, Finance Staff can access two main modules: 1) Finance, which consists of components for managing cost components or payment types. Payments are used to manage student payment transactions. Accounts are used to manage student savings or account data. 2) Reports for viewing and printing Payment Reports that are used to report student payments. In addition, a logout menu is available to end the system session. This structure demonstrates that Finance Staff have access rights focused on managing financial administration and integrated payment reporting, thereby supporting transparency, accuracy, and efficiency in financial management at the Roudatul Jannah Islamic Boarding School.

The financial use case diagram image above shows several accesses that can be performed by the financial section in the Islamic boarding school administration system. There are several menus that can be accessed by the financial administrator, including financial components, payment transactions, and payment amounts to tuition payment reports at the Islamic boarding school. This section is very important, where all available Islamic boarding school financial services will be fully accessed by the financial administrator, so that the financial administrator is fully responsible for managing the financial service administration section at the Islamic boarding school.

3.1.2 Use Case Diagram for Admin Staff

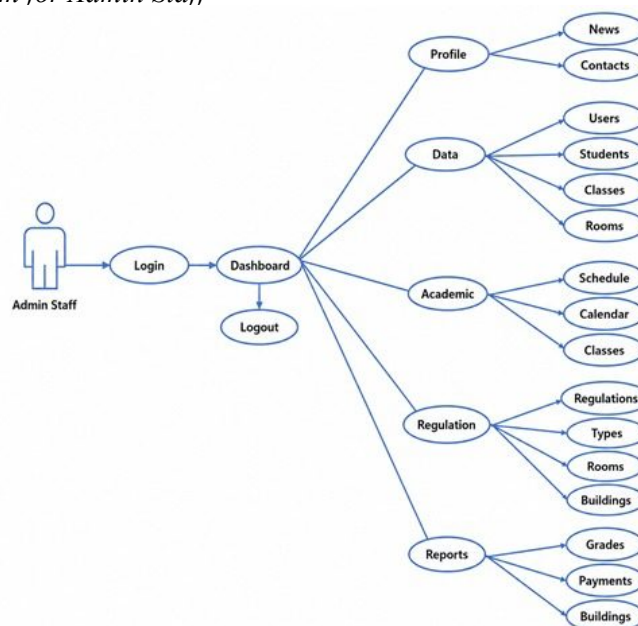


Figure 5. Use case diagram for admin staff

The use case diagram of the admin staff in Figure 5 shows several accesses that can be performed by the admin staff section in the Islamic boarding school administration system. There are several menus that can be accessed by the administrative staff, including information components, academic calendars, Islamic boarding school regulations, and violation reports in this section are the same as the admin section, but there are a few additions, namely in the regulations and violation reports section, where the contents of the report show the names of students who have committed violations at the Islamic boarding school

3.2 System Development Model

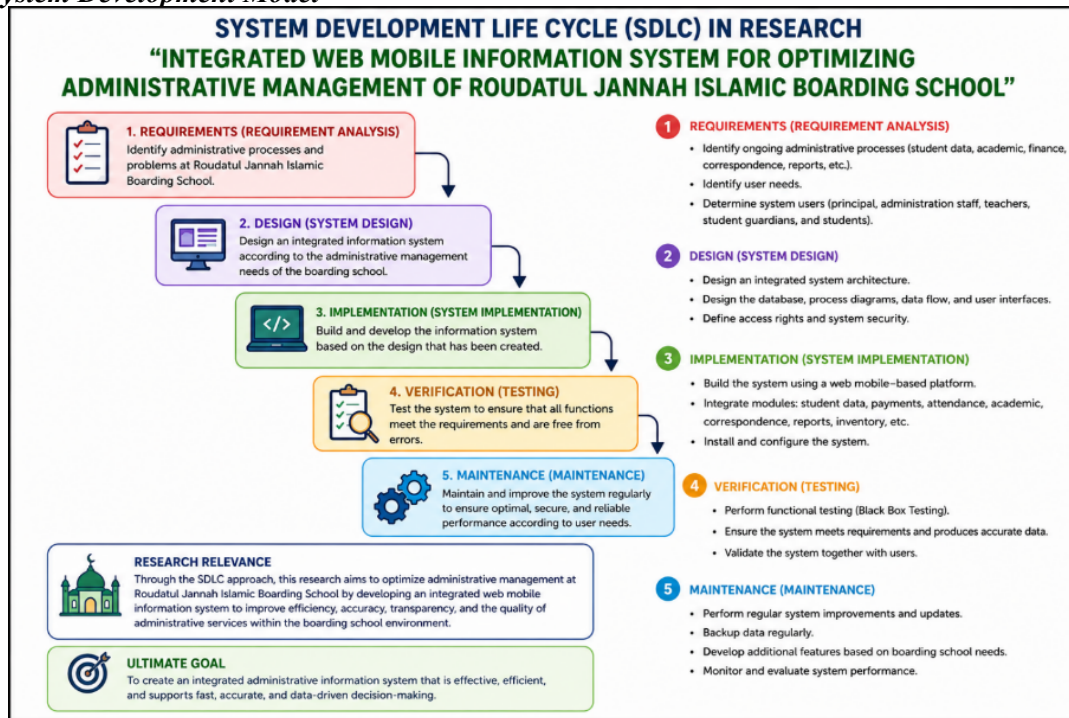


Figure 6. Waterfall Method Wahid (2020) Haniva et al. (2023)

Figure 6 Wahid (2020) Haniva et al. (2023) shows the system development stages using the System Development Life Cycle (SDLC) method in the study entitled "Integrated Web Mobile Information System for Optimizing Administrative Management of Roudatul Jannah Islamic Boarding School." The SDLC method was chosen because it provides a systematic and structured approach to software development, from needs identification to system maintenance. Through this method, the developed system is expected to address various administrative issues that have previously been handled manually, such as managing student data, academic records, financial records, correspondence, and preparing administrative reports.

1. Requirements (Needs Analysis), The first stage is Requirements Analysis, which is the process of identifying system requirements based on the actual conditions at Roudatul Jannah Islamic Boarding School. At this stage, data are collected through observation, interviews, and documentation to understand the current administrative workflow. The needs analysis covers various administrative aspects, such as managing student data, ustadz data, academic data, student payments, attendance, inventory, correspondence, and reporting tools. In addition, the needs of system users, including Islamic boarding school leaders, administrators, administrative staff, treasurers, teachers, and guardians of students, were identified. The result of this stage was a system requirements specification that served as the basis for the system design and development processes.

2. Design (System Design), After system requirements are obtained, the next stage is system design. This stage involves designing the overall system architecture, including the database, user interface, business process, and user access rights. Database design is performed to ensure that all administrative data are stored in an integrated manner within a single system. Furthermore, various design diagrams, such as use case diagrams, activity diagrams, Entity Relationship Diagrams (ERDs), and Structure Charts, are created to illustrate the relationships between processes and system components. The design phase aimed to produce a system that is easy to use, secure, and meets the administrative needs of Islamic boarding schools.
 3. Implementation (System Implementation): The Implementation phase is the process of building the system based on the previously created design. Coding was performed using mobile web technology so that the system could be accessed via computers and mobile devices. Various administrative modules have been developed and integrated into a single platform, such as the student data module, ustadz and employee data module, academic module, payment and financial module, attendance module, correspondence module, and administration report module. Integrating all modules into a single database allows information to be accessed quickly, accurately, and in real-time by authorized users.
 4. Verification (System Testing): After the system is completed, the verification or system testing phase is conducted. Testing aims to ensure that all system functions operate according to the user requirements and are error-free. The testing method used is Black Box Testing, which is based on available functions without directly viewing the program code. Testing was conducted on each system module, such as login, student data management, payments, academics, and reporting. The test results are used to correct any errors found so that the system can operate optimally.
 5. Maintenance (System Maintenance), The final stage is maintenance, which is the process of maintaining the system after it has been implemented in the Islamic boarding school environment. Maintenance is performed to ensure the stability, security, and performance of the system so that it continues to run smoothly. Maintenance activities include bug fixing, system and database updates, regular data backups, addition of new features according to user needs, and monitoring and evaluating system performance. During the maintenance stage, the system can be continuously developed to adapt to the changing administrative needs of Islamic boarding schools in the future.
- Relationship to Research The application of the SDLC method in this study plays a crucial role in realizing a Web-based Mobile Integrated Information System for Optimizing Administrative Management at Roudatul Jannah Islamic Boarding School.

4. Results and Discussions

Data collection was conducted from April to June 2026 at the Roudatul Jannah Islamic Boarding School. The data collection process comprised three stages: 1) Observation directly observing ongoing administrative processes, including student administration, academics, payments, correspondence, and report preparation; 2) Interviews conducting semi-structured interviews with boarding school leadership, administrative staff, the treasurer, and system operators to identify the system's functional and non-functional requirements; and 3) Documentation gathering administrative documents, forms, financial reports, student data, organizational structures, and other records relevant to system development.

This section discusses the administrative services website of the Roudatul Jannah Islamic Boarding School in Central Lampung, Indonesia. The author provides an online platform designed to facilitate the administration and services related to the Roudatul Jannah Islamic Boarding School. The website

offers various features and information useful for administrators, students, and parents or guardians of students. The following are some points and a visual representation of the developed website:

4.1 Home Page

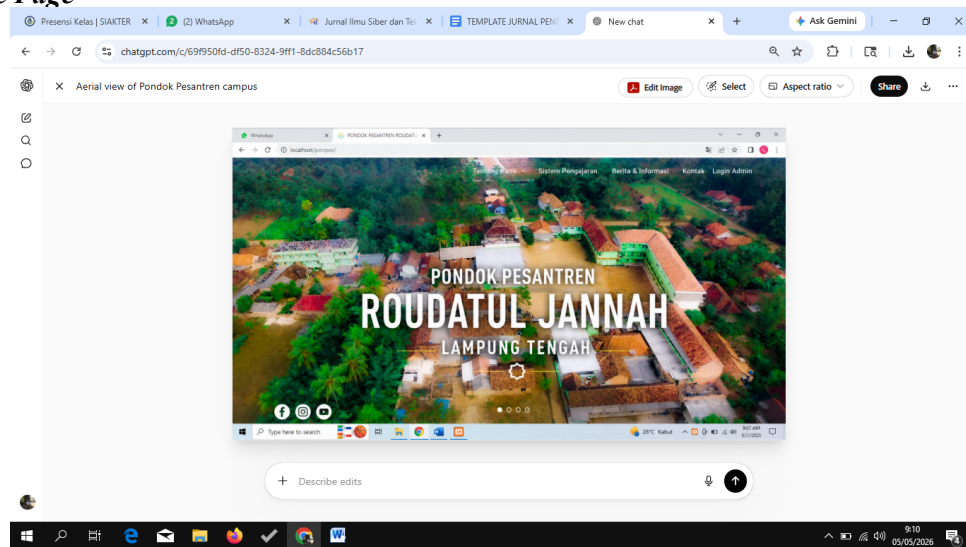


Figure 7. Home page

The homepage in Figure 7 shows the initial login display for users who have successfully logged in or can access the Islamic boarding school administration system that has been created. On this page, there are several menus containing information about the Islamic boarding school, contact messages to the admin, information about the teaching system at the Islamic boarding school, and activities at the Islamic boarding school. On this page, there is also a login menu for the admin and guardians of students to see information about payments at the Islamic boarding school.

4.2 Login Page

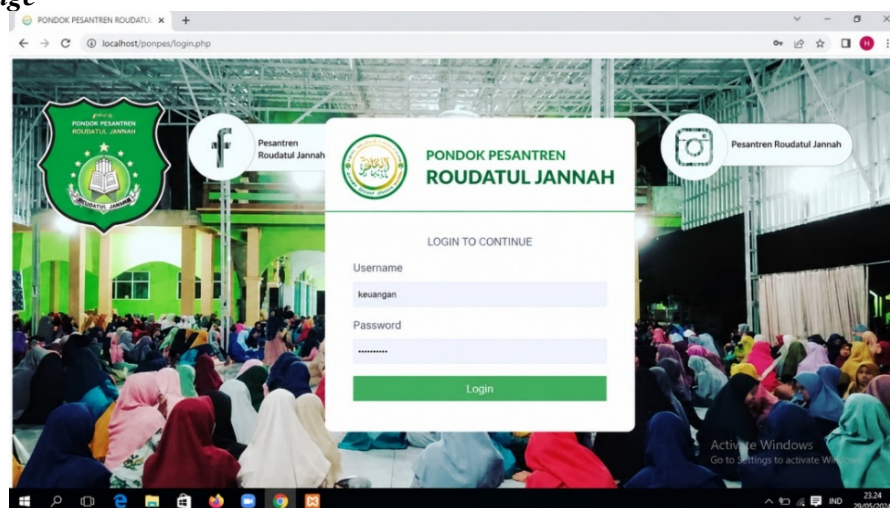


Figure 8. Login page

This Figure 8 shows the login page for the Islamic boarding school admin, which contains the name of the Islamic boarding school, the Islamic boarding school logo, the Islamic boarding school background, and the login page menu and password for users who already have access and a registered account.

4.3 Dashboard Page

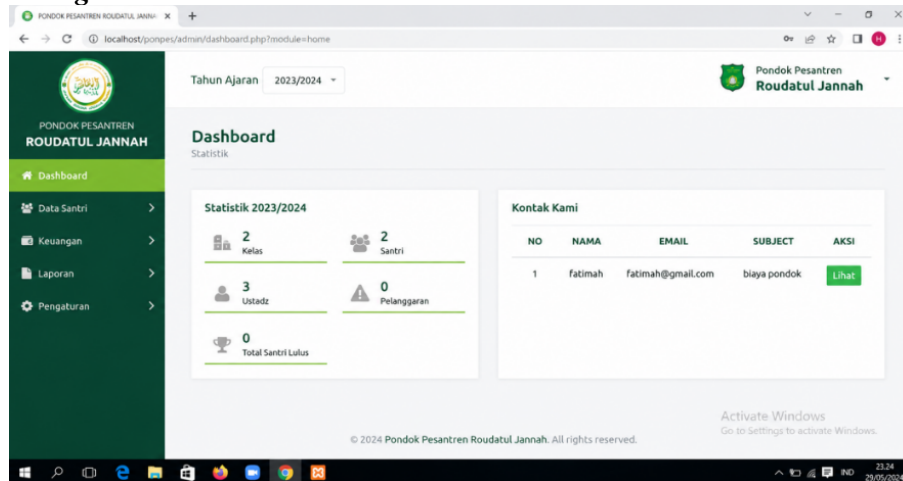


Figure 9. Dashboard page

The Figure 9 dashboard page shows the financial admin page for users who have successfully logged into their account. In this menu, there are several commands, such as information on the number of students, the number of students who have committed violations, and messages from several student guardians who have asked questions regarding financing the existing Islamic boarding school.

4.4 Payment Page

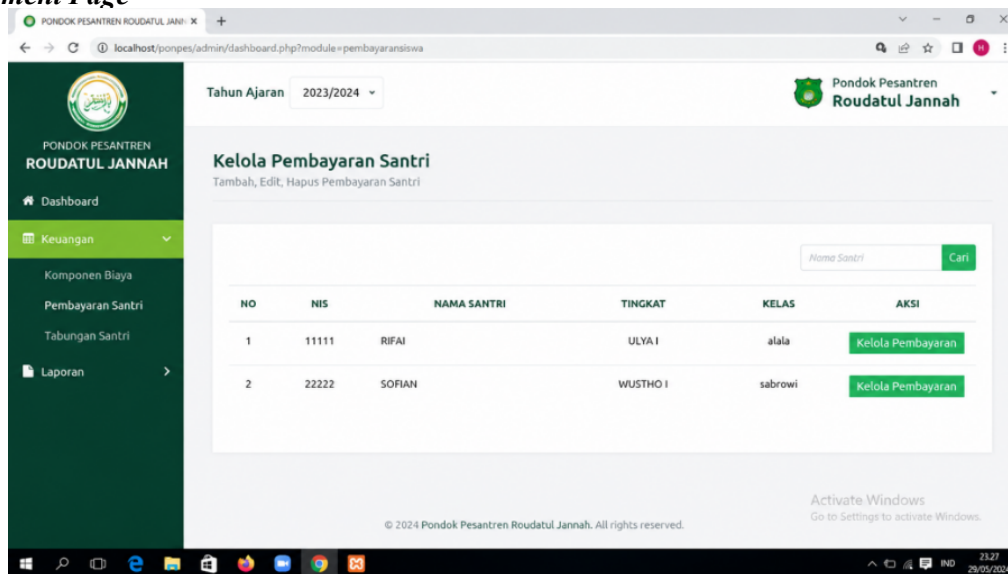


Figure 10. Payment page

In this section in Figure 10, namely the student payment management section, there is some information regarding the names of students at the class level and an action menu for carrying out transactions that will be carried out by the Islamic boarding school administration.

4.5 Transaction Page

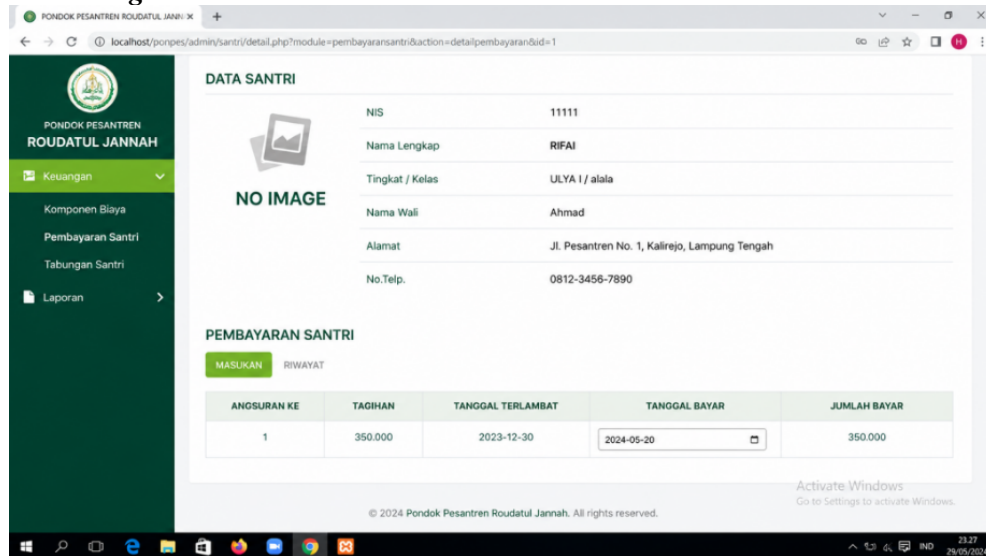


Figure 11. Transaction page

On the transaction page in Figure 11, after the administrator completes the payment process, the system displays the available payment categories, total amount payable, and payment due date. This information enables the corresponding student (santri) to view outstanding payment obligations and the associated payment deadlines

4.6 Reports Page

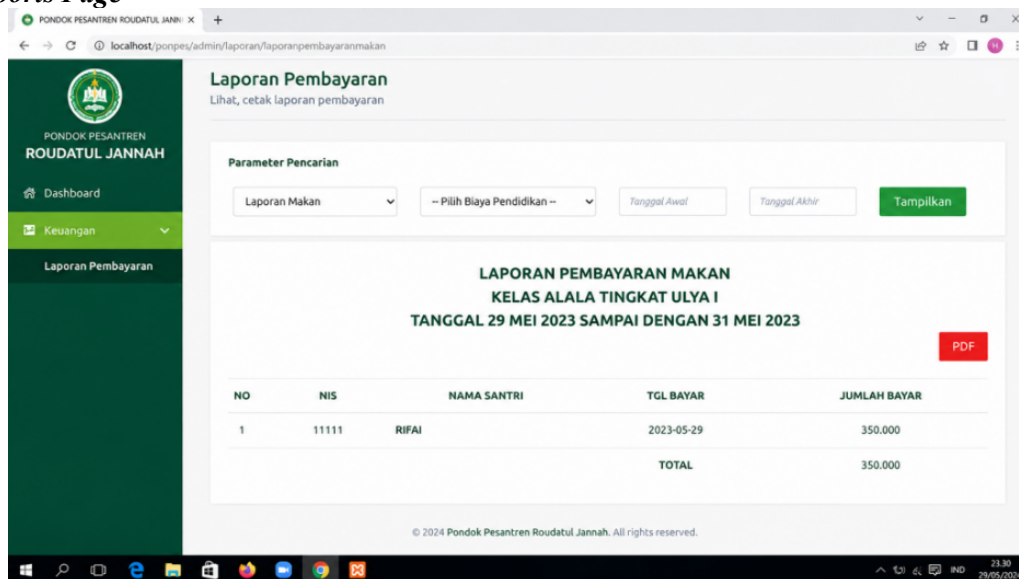


Figure 12. Report page

This report page in Figure 12 shows the results of the payment input, which is the output of the transaction payment that has been carried out. This report page contains information about the name

of the student, the date of payment, and the amount of the bill that has been paid. This report can also be printed and downloaded in PDF format as a replacement for manual receipts, which are usually only in paper form.

4.7 Analysis of Research Results

Once the system was developed utilizing the System Development Life Cycle (SDLC) method, testing was conducted to ensure that all system functions operated in accordance with user requirements. 1) Black Box Testing: This method was employed because the research focused on testing system functionality without examining the program code structure. The features tested included Login, Dashboard, Student Data, Teacher Data, Class Data, Subject Data, Schedules, Grades, Payments, Savings, Correspondence, Reports, and Logout. The success criteria included: all menus being accessible; data input, editing, deletion, and search processes functioning normally; reports being printable; and access rights aligning with user roles. 2) User Acceptance Test (UAT): Following the completion of functional testing, a User Acceptance Test (UAT) was conducted to determine whether the system met the user's needs. The users were asked to test all the features.

This Table 1 demonstrates that the implementation of an integrated mobile-web-based information system led to a significant improvement in administrative performance. The time required for data entry, archive retrieval, and report generation was substantially reduced. Furthermore, input error rates have decreased, data security has been enhanced through the use of an integrated database, and administrative transparency has improved compared with the previous manual system.

Table 1. Comparison of performance before and after implementation

Indicators	Before Implementation	After Implementation
Student Data Entry	15 minutes	5 minutes
Archive Retrieval	12 minutes	2 minutes
Report Generation	45 minutes	10 minutes
Data Entry Errors	High	Very Low
Data Security	Manual Record Keeping	Integrated Database
Administrative Transparency	Low	High

5. Conclusions

5.1 Conclusion

This study successfully developed and implemented an Integrated Web Mobile Information System to optimize the administrative management of the Roudatul Jannah Islamic Boarding School using the System Development Life Cycle (SDLC) method. The findings demonstrate that the developed system effectively integrates administrative processes, including student management, academic administration, financial management, correspondence, and reporting into a single platform. The system proved effective in improving administrative performance by accelerating data processing, increasing information accuracy, simplifying document retrieval, reducing data-entry errors, and enhancing data security and administrative transparency.

Functional testing confirmed that all system features operated as intended, and user evaluation indicated that the system was well-accepted and met the administrative needs of the Islamic boarding school. Overall, the research objectives were successfully achieved in this study. The developed system provides an effective and efficient solution for supporting integrated administrative management and contributes to improving the quality of administrative services at the Roudatul Jannah Islamic Boarding School.

From a practical perspective, the system simplifies daily administrative activities by integrating student records, academic administration, financial transactions, correspondence and reporting into a single platform. This integration reduces manual workload, minimizes data duplication, accelerates administrative processes, and improves the accuracy and accessibility of information. Consequently, administrative staff can perform their tasks more efficiently while providing faster and more reliable

services to students and parents. Furthermore, the implementation of this integrated system supports better decision-making by enabling stakeholders to access real-time and comprehensive information for effective planning and management.

5.2 Research Limitations

This study has several limitations that should be acknowledged. First, the research was conducted in only one Islamic boarding school, limiting the generalizability of the findings to other Islamic boarding school settings with different organizational and administrative characteristics. Second, the developed information system primarily focuses on basic administrative functions, including student data management, payment processing, and reporting, without incorporating more advanced educational management features. Third, the effectiveness of the system implementation is influenced by users' information technology skills, which may affect its optimal utilization. Finally, this study has not examined critical aspects such as data security, privacy protection, or integration with other digital services, which are essential for broader system adoption. Future research is therefore recommended to develop a mobile-based application to improve accessibility for administrators and students' guardians, integrate the system with digital payment platforms such as QRIS, e-wallets, and banking services, incorporate academic management, attendance tracking, and student progress monitoring features, and evaluate user satisfaction to assess the system's usability, effectiveness, and acceptance.

5.3 Suggestions and Directions for Future Research

Future researchers are encouraged to further develop the website-based Islamic boarding school service administration system by providing a more comprehensive description of its architecture, features, and implementation process to facilitate replication and adaptation in different institutional contexts. In addition, future studies should focus on enhancing the system by introducing new functionalities and improving existing features to better address the evolving administrative and operational needs of Islamic boarding schools. Such developments are expected to increase the system's effectiveness, usability, and long-term sustainability.

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Author Contributions

MS conceived and designed the study, developed the research methodology, collected and analyzed the data, implemented the website-based information system, and drafted the original manuscript. LSEER supervised the research process, contributed to the study design, validated the methodology, and critically reviewed and edited the manuscript. MR contributed to data interpretation, system evaluation, and manuscript revision. MJ assisted with software testing, data validation, visualization, and final manuscript editing. All authors have read and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

References

- Ahyani, E., & Dhuhani, E. M. (2024). Transformasi digital dalam manajemen perkantoran pendidikan: Sebuah kajian literatur. *Jurnal Visionary: Penelitian Dan Pengembangan Dibidang Administrasi Pendidikan*, 12(1), 205-215. <https://doi.org/10.33394/vis.v12i1.10785>

- Aini, N., Harun, Y. T., & Wigandi, D. P. (2023). Penerapan sistem informasi digitalisasi data aset pegawai pada PT Servis Barokah Indonesia berbasis website. *REMIK: Riset dan E-Jurnal Manajemen Informatika Komputer*, 7(3), 1660-1675. <https://doi.org/10.33395/remik.v7i3.12866>
- Alfauzi, A. R., & Faslah, R. (2025). Pengendalian mutu pendidikan pesantren di era digital: Peluang dan tantangan. *Raudhah Proud To Be Professionals: Jurnal Tarbiyah Islamiyah*, 10(2). <https://doi.org/10.48094/raudhah.v10i2.940>
- Amalia, A., & Rojabi, M. A. (2026). Html unlocked. *Afdan Rojabi Publisher*.
- Andriani, Y., Suwitri, S., & Yuniningsih, T. (2023). Penerapan E-goverment melalui Sistem Informasi Kesejahteraan Sosial Next Generation (SIKS-NG) sebagai aplikasi pengolah data kemiskinan di Kabupaten Bengkulu Selatan. *Jurnal Agregasi: Aksi Reformasi Government Dalam Demokrasi*, 11(2), 129-147. <https://doi.org/10.34010/agregasi.v11i2.11255>
- Beaty, S., & Oktarina, N. (2025). Digitalisasi administrasi kantor: Meningkatkan efisiensi dan kualitas layanan di era digital. In *Administrasi Perkantoran Jilid 1* (pp. 137-156). Semarang: Unnes Pub.
- Enterprise, J. (2023). *HTML, PHP, dan MySQL untuk pemula (update version)*. Elex Media Komputindo.
- Fabrianne, S. F., Fitri, I., & Fauziah, F. (2022). Rancang bangun sistem informasi penjadwalan pelatihan dosen di Laboratorium Blended Learning Universitas Nasional berbasis web dengan model Waterfall. *Jurnal Ilmiah Edutic: Pendidikan dan Informatika*, 9(1), 49-62. <https://doi.org/10.21107/edutic.v9i1.8426>
- Haniva, D. T., Ramadhan, J. A., & Suharso, A. (2023). Systematic literature review penggunaan metodologi pengembangan sistem informasi waterfall, agile, dan hybrid. *JIEET (Journal of Information Engineering and Educational Technology)*, 7(1), 36-42. <https://doi.org/10.26740/jieet.v7n1.p36-42>
- Husnul, A. H., Nurhatisyah, N., & Friadi, J. (2022). Sistem informasi pariwisata Pantai Glory Melur berbasis web. *Jurnal Ilmu Siber dan Teknologi Digital*, 1(1), 53-64. <https://doi.org/10.35912/jisted.v1i1.1799>
- Laudon, K. C., & Laudon, J. P. (2022). Sistemas de informação gerenciais: Administrando a empresa digital. *Bookman Editora*.
- Lutfiyah, R., Septriani, C. S. P., Hidayah, H. F., & Iqbal, M. (2025). Manajemen pesantren dalam meningkatkan kualitas pendidikan islam di era modren. *MUDABBIR Journal Research and Education Studies*, 5(2), 1068-1076. <https://doi.org/10.56832/mudabbir.v5i2.1328>
- Magdalena, L., Alicia, S., Priandini, B., & Nurpuriani, Z. (2025). *Sistem informasi terintegrasi di pemerintahan: Pendekatan digital untuk pelayanan pada sektor publik*. PT. Sonpedia Publishing Indonesia..
- Mulyati, S., Rahman, A., Hapipah, R., Bagus, A., Wahidar, A., & Saifudin, A. (2023). Perancangan sistem informasi penjualan berbasis web pada toko pakaian. <https://doi.org/10.32493/jtsi.v6i1.22638>
- Mutoffar, M. M., Bahar, A., & Mustafa, F. (2024). The role of management information system innovation as a catalyst to enhance profitability in the contemporary digital business era. *Jurnal Minfo Polgan*, 13(1), 172-180. <https://doi.org/10.33395/jmp.v13i1.13510>
- Muzakkir, M., Surdin, I., & Ishak, I. (2025). Rancang bangun dan implementasi mobile web sebagai sarana informasi pemberdayaan masyarakat Desa Nain Kecamatan Pagimana. *Jurnal Ilmiah Sistem Informasi dan Teknik Informatika (JISTI)*, 8(1), 133-141. <https://doi.org/10.57093/jisti.v8i1.277>
- Natavia, D. S., Azainil, A., Haeruddin, H., & Buhari, M. R. (2025). Integrasi sistem informasi manajemen dalam mendukung mutu pendidikan. *JiIP-Jurnal Ilmiah Ilmu Pendidikan*, 8(7), 7063-7073. <https://doi.org/10.54371/jiip.v8i7.8374>
- Noviana, R. (2022). Pembuatan aplikasi penjualan berbasis web monja store menggunakan php dan mysql. *Jurnal Teknik Dan Science*, 1(2), 112-124. <https://doi.org/10.56127/jts.v1i3>
- Pancheekha, P., & Harrelson, C. (2024). *Web browser engineering*.

- Pressman, R. S., & Maxim, B. R. (2021). *Engenharia de software-9*.
- Putra, Y. W. S., Dawis, A. M., Novi, N., Natsir, F., Fitria, F., Widhiyanti, A. A. S., Hasan, F. N., Somantri, S., & Maniah, M. (2023). *Pengantar aplikasi mobile*.
- Putri, M. P., Nadeak, E., Malahayati, M., Rahmi, N., Rini, A., Sari, D. N., Kurniati, K., Kusmiati, H., & Pratama, R. A. A. (2023). Sistem manajemen basis data menggunakan MYSQL.
- Rini, E. M., Yusuf, D., Haq, E. S., & Panduardi, F. (2025). Implementasi sistem informasi terpadu sebagai sarana optimalisasi pengelolaan santri dan siswa untuk Sekolah Berbasis Pesantren (SBP) di Ponpes Nuruttauhid. *JPP IPTEK (Jurnal Pengabdian dan Penerapan IPTEK)*, 9(2). <https://doi.org/10.31284/j.jpp-iptek.2025.v9i2.8316>
- Rismawati, R., Ibrahim, T., Kartika, I., & Arifudin, O. (2024). Peran sistem informasi dalam meningkatkan mutu layanan pendidikan. *Jurnal Tahsinia*, 5(7), 1099-1122. <https://doi.org/10.57171/jt.v5i7.618>
- Ropik, I., & Rosadi, A. (2025). Tantangan dan peluang implementasi Sistem Informasi Manajemen (SIM) di lembaga pendidikan islam: Challenges and opportunities in the implementation of management information systems in islamic educational institutions. *Epistemic: Jurnal Ilmiah Pendidikan*, 4(2), 238-252. <https://doi.org/10.70287/epistemic.v4i2.388>
- Sabarno, S. H. S., Hidayat, N. N. H., Wildan, M. W. A. R., Fajar, F. S., & Arisantoso, A. (2025). Perancangan website profil dan sistem pendaftaran santri baru pada Pondok Modern Assalam Subang Jawa Barat. *Jurnal SISKOM-KB (Sistem Komputer dan Kecerdasan Buatan)*, 9(1), 50-62-50-62. <https://doi.org/10.47970/siskom-kb.v9i1.873>
- Saifudin, A., Saputra, A. K., Saputra, B., Subhan, F., & Maulana, F. N. (2022). Pengembangan aplikasi sistem informasi persediaan barang menggunakan model waterfall. *Jurnal Algoritma*, 5(4), 247-254. <https://doi.org/10.32493/jtsi.v5i4.21197>
- Sandhyavitri, A., Sukma, D. Y., Putra, R. B. T., Aditya, F. S., Firdaus, M. N., Hutagalun, R. T., Kamala, W., & Cahyandra, R. (2024). Implementasi sistem informasi akademik berbasis cloud computing system di Pondok Pesantren Khairul Ummah 2 Pekanbaru. *Jurnal Pengabdian UntukMu Negeri*, 8(3), 400-408. <https://doi.org/10.37859/jpumri.v8i3.7943>
- Saputro, A. K., Wibisono, K. A., Alfita, R., Nahari, R. V., Ibadillah, A. F., & Anwar, M. N. (2024). *Pemrograman dasar web dengan html*.
- Soam, S. K., N, S. R., BS, Y., Balasani, R., S, R., Marwaha, S., Kumar, P., & Agrawal, R. (2023). AHP analyser: A decision-making tool for prioritizing climate change mitigation options and forest management. *Frontiers in Environmental Science*. <https://doi.org/10.3389/fenvs.2022.1099996>
- Suli, K. T., & Nirsal, N. (2023). Rancang bangun sistem informasi desa berbasis website (studi kasus Desa Walenrang). *D'computare: Jurnal Ilmiah Teknologi Informasi dan Ilmu Komputer*, 13(1), 24-32. <https://doi.org/10.30605/dcomputare.v13i1.57>
- Utami, M., & Priyambodo, A. (2025). Evaluasi aplikasi JnT Express menggunakan teori usability Jacob Nielsen. *Jurnal Cakrawala Informasi*, 5(2), 110-121. <https://doi.org/10.54066/jci.v5i2.738>
- Wahid, A. A. (2020). Analisis metode waterfall untuk pengembangan sistem informasi. *Jurnal Ilmu-ilmu Informatika dan Manajemen STMIK*, 1-5.
- Wijayanti, N., & Wicaksana, F. A. (2023). Implementasi fungsi manajemen George R Terry dalam meningkatkan mutu lembaga pendidikan. *Jurnal Cerdik: Jurnal Pendidikan Dan Pengajaran*, 3(1), 30-43. <https://doi.org/10.21776/ub.jcerdik.2023.003.01>
- Yusman, Y., Putra, R. R., & Sinaga, I. (2024). Transformasi administrasi di era digital. *Serasi Media Teknologi*, 4(1), 433. <https://doi.org/10.31004/riggs.v4i1.433>