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Development of a Web-Based New Student Admission Information System at TKIT Al-Khattaby

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ABSTRACT

New student admission is an important administrative process in educational institutions that requires effective data management and information dissemination. At TKIT Al-Khattaby, the admission process was previously conducted conventionally through direct form completion, brochures, verbal communication, and WhatsApp. These practices caused delays in data processing, increased the risk of recording errors and data loss, and limited access to admission information for prospective parents or guardians. This study aims to develop a web-based New Student Admission Information System at TKIT Al-Khattaby to improve the efficiency and effectiveness of the admission process. The system was developed using the Waterfall methodology, comprising requirements analysis, system design, implementation, testing, and maintenance. The system was implemented using the Laravel framework and PHP programming language, with MySQL as the database management system. The developed system provides essential functionalities, including school information, online student registration, document uploading, applicant data management, registration verification, teacher and student management, news publication, and activity agenda management. System functionality was evaluated using Black Box Testing, which demonstrated that the main system functions operated according to the specified requirements. The developed system can improve the efficiency of new student admission management and facilitate broader access to admission-related information for prospective parents and the community.

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1. Introduction

The utilization of information technology plays an increasingly important role in improving the quality and efficiency of educational services. Digital transformation in education has

encouraged schools and educational institutions to adopt information systems, digital platforms, and web-based services to support learning, administration, communication, and information management. Recent research on digital transformation in Indonesian education indicates that educational information systems can support the modernization of school management and

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educational services, although their successful implementation also depends on infrastructure, digital competence, and institutional support [1]. In addition, systematic research on digital learning demonstrates that technology can expand access to educational resources and provide more flexible forms of interaction between educators and learners [2]. Therefore, the utilization of information technology should not be viewed only as a technological improvement but also as an important component of efforts to improve the accessibility, efficiency, and quality of educational services.

Information systems can provide benefits beyond learning activities by supporting administrative processes and communication among institutional stakeholders. The DeLone and McLean information systems success model identifies system quality, information quality, use, user satisfaction, and organizational impact as important dimensions in evaluating information system success [3]. Subsequent research has further demonstrated the importance of information quality and system quality in determining the effectiveness of information systems [4], while later meta-review research confirms the continued relevance of these dimensions in information systems research [5]. These perspectives are relevant to educational institutions because a school information system must provide accurate information, be accessible to users, and support institutional activities effectively.

The application of information technology in educational environments has also been demonstrated through research on digital learning and educational information systems. Karimah's study of e-learning platforms for boarding schools found that digital platforms can provide more interactive learning experiences and improve communication among stakeholders, although infrastructure and digital literacy remain important implementation considerations [6]. Similarly, Umary demonstrated that technology-based learning media can support the delivery of educational materials in a more interactive and informative manner than conventional classroom-based approaches [7]. These findings indicate that digital technology can serve as an important medium for improving both educational communication and access to information.

In the context of school administration and services, web-based information systems can reduce dependence on conventional and manual processes. Fadila, Samudra, and Hendra developed a web-based student discipline information system at SMKN 1 Bonjol after identifying problems associated with manual record keeping, including potential data loss, duplication, and delays in communicating student information to parents [8]. Their study demonstrates how a computerized information system can support structured data management and improve communication between schools and parents. Likewise, Zamrozi and Sanmarino developed an information system for community administrative services to address problems such as long queues, service delays, and difficulties in accessing administrative data [9]. These findings are relevant to school services because parents and prospective students similarly require information and administrative processes that are accessible, timely, and well organized.

Web-based systems can also support information dissemination and data management for users outside an institution. Maharani and M developed a web-based community data collection system in Jakabaring, Palembang, to address data

loss and improve structured data collection, processing, and management [10]. Their research demonstrates the potential of web-based systems to centralize information and make data management more systematic. Furthermore, Friyani's research on a web-based management information system found that web-based system implementation can improve operational efficiency, coordination, and service delivery through centralized information and real-time tracking [11]. Although the research context differs from education, the findings provide relevant evidence regarding the potential of web-based information systems to improve service processes.

The quality of information and services delivered through a web platform is also an important consideration. Hidayat, Lestari, and Yel examined information system quality using the PIECES framework and found that dimensions including performance, information, economics, control, and efficiency were significantly associated with customer satisfaction [12]. This finding emphasizes that developing a website should not focus solely on providing information but should also consider system performance, information quality, efficiency, and user needs. Similarly, research on website quality in higher education found a positive relationship between website quality and user satisfaction, particularly in relation to usability, information quality, service interaction, accessibility, and responsiveness [13]. These findings provide a basis for considering usability and information quality when designing a web-based school information system.

The development of a web-based information system is particularly relevant to the increasing importance of websites as information and communication channels. Research on web portals in higher education institutions indicates that web portals can function as important tools for information management, communication, and access to updated institutional information [14]. Web portals can also serve different stakeholders and support online services, making them more than simply static sources of institutional information. In addition, research on web portal service quality identifies usability, usefulness of content, adequacy of information, accessibility, and interaction as important aspects of users' perceptions of web-based services [15].

Therefore, this research focuses on the development of a web-based new student admission information system for TKIT Al-Khattaby. The system is designed to integrate school profile information, children's activities, admission information, and relevant administrative services into an accessible web-based platform. Through the development of this system, the research aims to provide a technological solution that supports more structured information management, facilitates new student admission services, and improves the accessibility of information for parents and the wider community. Accordingly, the research is entitled "Development of a Web-Based New Student Admission Information System for TKIT Al-Khattaby."

2. Method

2.1. Research Object

The object of this research is TKIT Al-Khattaby, located in Masamba District, North Luwu Regency, South Sulawesi Province. The research focuses on developing a web-based new student admission information system to support the dissemination

of school information, online registration services, and data management by administrators.

2.2. System Development Method

The system development method employed in this study is the Waterfall method. This method was selected because the system requirements could be identified from the outset. The stages involved include requirements analysis, system design, implementation, testing, deployment, and evaluation and maintenance (Table 1).

Table 1 – Research Steps

Steps	Activities
Requirements Analysis	Identifying user problems and needs through observation and data collection.
Design	Creating the system design using UML, flowcharts, ERDs, and wireframes.
Implementation	Building the system using Laravel, PHP, and MySQL.
Testing	Testing system functions using the Blackbox Testing method.
Evaluation/Refinement	Conducting evaluations or refinements based on system testing.

2.3 Data Collection Techniques

Research data was obtained through observation and interviews at TKIT Al-Khattaby to understand the processes of information dissemination, new student registration, and data management. Supporting data was also gathered from documents and literature relevant to web-based information systems and software development.

2.4 Research Steps

The research workflow used in this study is shown in Figure 1.

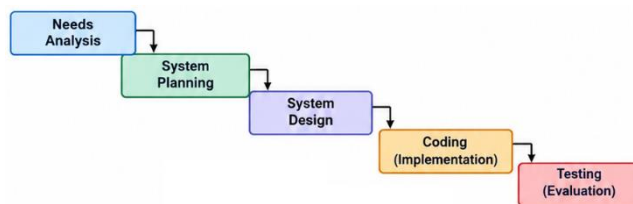


Fig. 1 - The research workflow

3. Result and Discussion

The system design phase follows the requirements analysis stage and aims to outline the initial design of the system to be developed: a web-based new student admission information system for TKIT Al-Khattaby. This phase provides a clear overview of the system structure, workflow, and user-system interactions prior to the actual development stage.

The system design in this study employs the Unified Modeling Language (UML) as a modeling tool. UML was selected for its ability to visualize the system in a structured and easily

understandable manner, thereby facilitating a development process that aligns with the previously analyzed requirements (Figure 2).

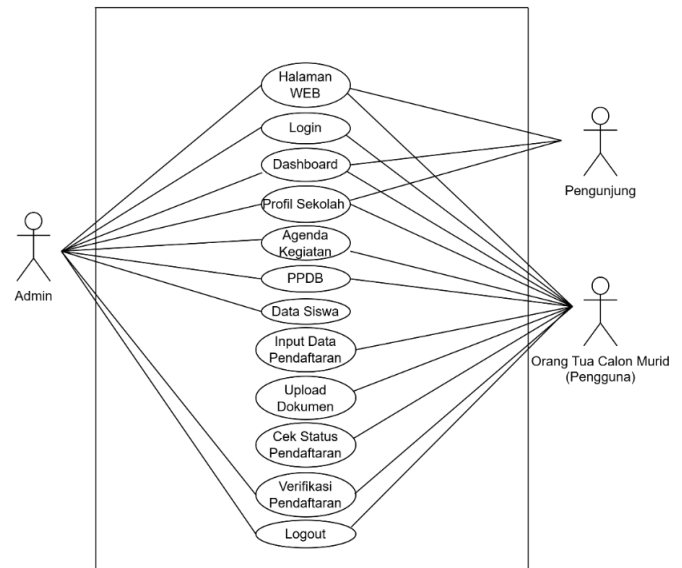


Fig. 2 – Use Case Diagram

An Entity Relationship Diagram (ERD) is used to illustrate the database structure and the relationships between entities within the web-based New Student Admission Information System (PPDB) for TKIT Al-Khattaby (Figure 3). The entities within the system include Admin, School, Teacher, Student, Activity Schedule, and Registration (PPDB). These entities are interconnected according to system requirements, enabling the integrated management of school data, student data, teacher data, activity schedules, and new student registrations. This ERD serves as the foundation for database design, supporting the system's data storage and management processes.

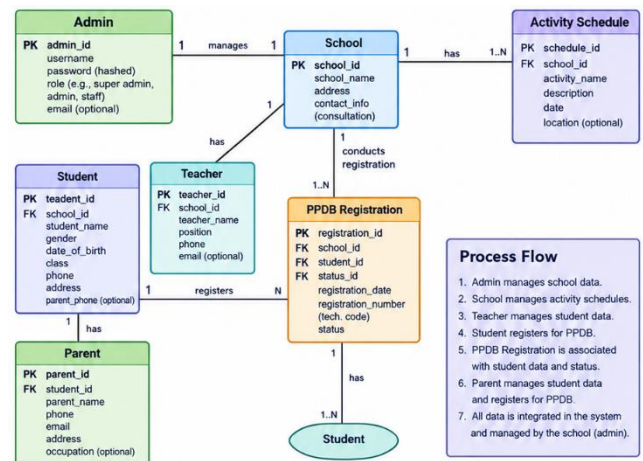


Fig. 3 – Entity Relationship Diagram

Administrators have access to manage system information and data, while users can access school information and complete online registration. The system implementation includes a login page, dashboard, school profile, teacher and student data, student admission forms, document uploads,

registration verification, and the management of news and event schedules (Table 2).

Table 2 – System Features

No	Features	Function
1	Login	Provides administrator access to the system via account validation.
2	Dashboard	Displays a summary of system information, such as the number of registrants, teachers, students, and scheduled events.
3	School Profile	Manages the school's vision, mission, history, contact details, and facilities.
4	Teacher Data	Adds, modifies, deletes, and searches for teacher records.
5	Student Data	Manages student records using CRUD functions.

6	Online Enrollment (PPDB)	Allows prospective parents/guardians to complete registration forms online.
7	Document Upload	Uploads Family Cards, Birth Certificates, and passport-style photos.
8	Registration Verification	Reviews data and documents, and determines the status (processing, accepted, or rejected).
9	News and Events	Manages and displays news updates and the school's schedule of activities.

The system validates the username and password. If the data is correct, the admin is directed to the dashboard page; otherwise, the system displays an error message. This page is shown in Figure 4.

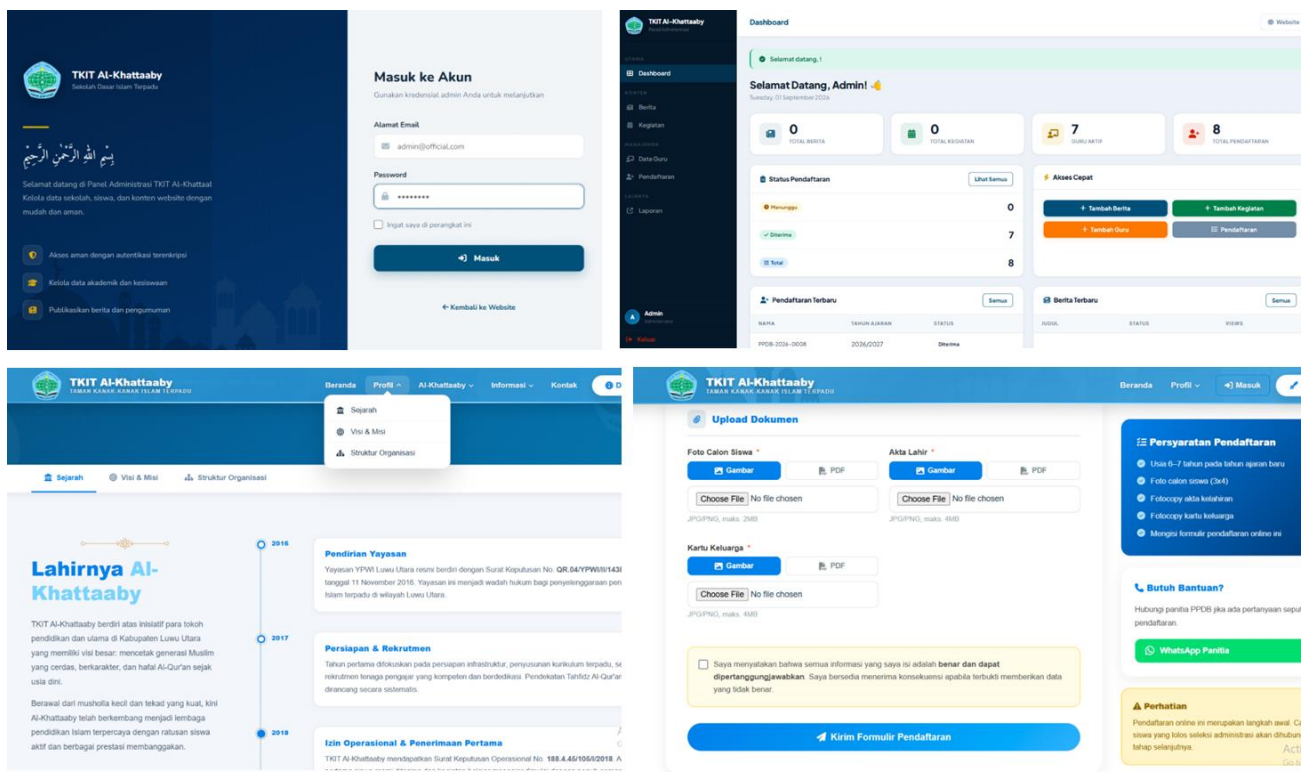


Fig. 4 - The proposed system interfaces

The Document Upload menu allows users to upload supporting documents required for the new student registration process. On this page, parents of prospective students can upload various required documents, such as the student's photograph, birth certificate, and family card. To upload a document, users select the appropriate file using the "Choose File" button and ensure the selected file meets the specified requirements. Once all documents have been selected, users can click the "Upload" or "Save" button to save them to the system. The uploaded documents can then be reviewed and verified by an administrator as part of the registration process.

Subsequently, system testing was conducted using the Blackbox Testing method. The testing involved providing inputs to each feature and observing the resulting outputs (Table 3). The tests

covered both administrator and user functions to ensure the system operates according to requirements.

Table 3 – Blackbox Testing Result

No	Feature	Scenario	Expected Result	Status
1	Login	Enter valid username and password	The system authenticates the user and displays the administrator dashboard	Pass
2	Login	Enter an incorrect password or leave required	The system rejects the login attempt and displays an appropriate validation/error message	Pass

3	Dashboa rd	fields empty Access the dashboard after successful login	The dashboard page and relevant data summaries are displayed correctly	Pass
4	School Profile	View, modify, and save school profile information	The system displays the profile data and successfully saves the updated information	Pass
5	Teacher Data	Add, modify, delete, and search teacher data	The system successfully performs the requested operation and displays the updated data	Pass
6	Student Data	Add, modify, delete, and search student data	The system successfully performs the requested operation and displays the updated data	Pass
7	News	Add, edit, delete, and view news information	The system successfully manages the news data and displays the available news	Pass
8	Agenda	Add, modify, delete, and view agenda information	The system successfully manages the agenda data and displays the available agenda	Pass
9	Student Admissi on (PPDB)	Complete and submit the registration form using valid data	The system saves the registration data and displays a registration number or proof of registration	Pass
10	Student Admissi on (PPDB)	Submit the registration form with missing or invalid data	The system rejects the submission and displays an appropriate validation/error message	Pass
11	Docume nt Upload	Upload a valid document according to the permitted format and size	The system successfully uploads and stores the document	Pass
12	Docume nt Upload	Upload an invalid file or leave the document empty	The system rejects the upload and displays an appropriate validation message	Pass
13	Verificat ion	Approve or reject a submitted student registration	The registration status changes according to the selected verification action	Pass
14	Logout	Click logout button after completing	The system terminates the session and redirects the user to the login	Pass

system
activities

page

Based on the implementation results, the developed system provides the key functions required by TKIT Al-Khattaby to support its new student admission process. The system enables school information to be disseminated online, allowing the public to access details without needing to visit the school in person. From an administrative perspective, the system facilitates the structured management of data regarding applicants, teachers, students, news, and schedules. Features such as online admission registration and document uploading streamline the registration process for prospective parents or guardians. Administrators can verify applicant data and documents and assign registration statuses. Black-box testing results indicate that all primary test scenarios were successful; thus, the tested functions produced the expected outputs. These results demonstrate that the system can serve as a tool to support the digitalization of new student admission services at TKIT Al-Khattaby.

4. Conclusion

The developed system supports the dissemination of school information, online registration for new students, document uploads, applicant data management, and administrator verification processes. Black Box Testing confirmed that all tested core functions operated as expected, making the system suitable for facilitating the new student admission process at TKIT Al-Khattaby. Future development could include automated notifications via WhatsApp or email, payment gateway integration, an analytics dashboard, and the creation of an Android-based application. Specifically, the system could be enhanced by adding automated notification features—via WhatsApp or email—to inform prospective students and parents about registration details and status. Additionally, the payment system could be upgraded with a payment gateway to make payment and verification processes faster, easier, and more efficient. Future enhancements could also incorporate graphical reporting features and an analytics dashboard to assist the school in monitoring data and supporting decision-making processes.

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