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Design and Evaluation of Acceptance of a Web-Based System at Nurul Hidayah Islamic Boarding School

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ABSTRACT
The design and development of a web-based information system to improve the quality of service and education at Nurul Hidayah Islamic Boarding School represented a strategic effort to utilize information technology in enhancing administrative efficiency and information accessibility. The system was developed to address problems related to ineffective information dissemination and the manual registration process for new students. The web-based application, developed using the Waterfall method, enabled online student registration and provided faster and more accurate access to educational information. System development involved requirements analysis, Unified Modeling Language design, interface and backend implementation, and system testing. To evaluate the effectiveness of the developed system, user acceptance was assessed using User Acceptance Testing based on a five-point Likert scale questionnaire involving 15 system users. The evaluation focused on system usability, ease of use, information clarity, system efficiency, and user satisfaction. The evaluation results showed an overall average acceptance score of 4.39, indicating a high level of user acceptance. These results demonstrated that the system was capable of improving administrative efficiency and supporting educational services in a more structured and effective manner.

Keywords: **I**nformation System; Islamic Boarding School; User Acceptance Testing; Waterfall Method; Web-Based System.

INTRODUCTION

In today's digital era, the utilization of information technology has become a crucial necessity for educational institutions in improving service quality, administrative efficiency, and information accessibility. Web-based information systems have been widely adopted in educational environments to support academic administration, communication, and service delivery in a more structured and efficient manner. Several international studies highlight that the implementation of web-based information systems can significantly enhance organizational performance, transparency, and user satisfaction in educational institution[1], [2].

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Islamic boarding schools, as traditional religious educational institutions, are also required to adapt to technological developments in order to remain relevant and competitive in the digital age. Previous studies indicate that the adoption of information systems in Islamic educational institutions contributes positively to improving service effectiveness, data management accuracy, and stakeholder engagement [3], [4]. However, many Islamic boarding schools still rely on conventional methods for information dissemination and student registration, resulting in inefficiencies, delays, and potential administrative errors.

Nurul Hidayah Islamic Boarding School faces similar challenges, particularly in the delivery of educational information and the registration process for new students, which are still carried out manually. The use of conventional communication media limits the speed and accuracy of information distribution and reduces the effectiveness of administrative services. This condition highlights the need for an integrated web-based information system that can automate administrative processes while providing fast, accurate, and easily accessible information for students, parents, and the wider community.

Although numerous studies have focused on the design and development of web-based information systems in educational institutions, most of them emphasize system implementation and technical development aspects without providing empirical evaluation of user acceptance and system effectiveness. Research related to Islamic boarding school information systems also predominantly discusses system design and functionality, with limited attention to evaluating how users perceive, accept, and utilize the developed systems [5]. This indicates a research gap in terms of systematic evaluation of user acceptance as a measure of system success in Islamic boarding school environments.

Based on the background and research gap described above, this study aims to design a web-based information system at Nurul Hidayah Islamic Boarding School, evaluate user acceptance of the developed system, and analyze its contribution to improving administrative services and service quality in Islamic boarding school environments. The evaluation focuses on assessing users' perceptions regarding system usability, usefulness, and overall acceptance through a structured evaluation approach, and the results are expected to provide empirical evidence on the effectiveness of web-based information systems in supporting educational administration in Islamic boarding schools.

METHOD

1. Method of collecting data
   To compile this research on service improvement information systems, the author used the following data collection methods:
   a. Field Observation
   b. Interviews
   c. Document Analysis
   d. Literature Review
2. Information Systems Development Model
   This study uses the Waterfall software development model to design an application to improve the quality of service and education at the Nurul

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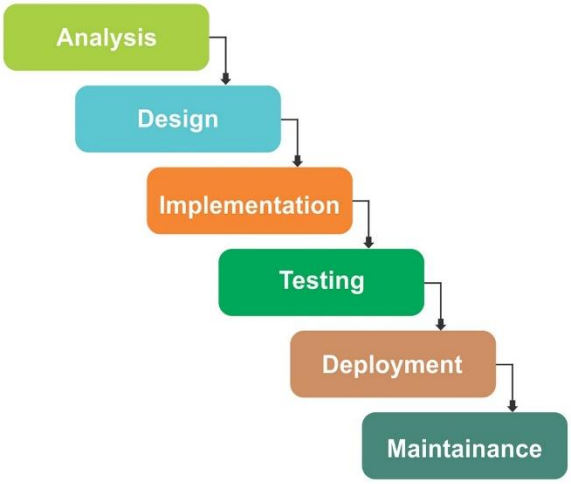
Hidayah Islamic Boarding School. The Waterfall method was chosen because it has a systematic, structured, and sequential workflow, allowing each development stage to be completed thoroughly before moving on to the next stage [6], [7]. This method has also proven to be effective in developing web-based Islamic boarding school information systems and educational administration because it is able to minimize discrepancies in needs and simplify the documentation process. [8]. Although there are alternative approaches such as Agile which allow for more flexible and iterative development, several studies show that Waterfall remains the ideal choice for systems that have stable requirements and a clearly defined scope, such as those applied to the development of information systems in Islamic boarding school environments [9]. Therefore, all stages in this research including needs analysis, system design, implementation, testing, and maintenance were adopted based on the Waterfall model structure which has been widely used in similar research. [6], [7], [8].



Picture 1. Waterfall Model

3. System Evaluation Method

In this study, the Waterfall model is used solely as a system development methodology and not as an evaluation method. Therefore, system evaluation is conducted using User Acceptance Testing (UAT) to measure user acceptance of the developed web-based information system based on user experience during system usage [1], [2]. The evaluation involves system users at Nurul Hidayah Islamic Boarding School who directly interact with the system. Data are collected using a structured questionnaire covering system usability, ease of use, clarity of information, and overall user satisfaction, measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) [2], [4], [5]. The collected data are analyzed using descriptive quantitative analysis by calculating the average score of user responses to determine the level of system acceptance. The average acceptance score is calculated using the following formula:

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$$X = \frac{\Sigma X}{n} \quad (1)$$

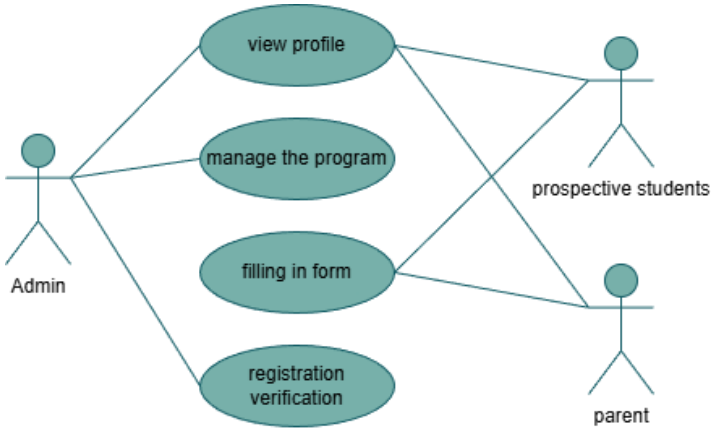
Where $\bar{X}$ represents the average acceptance score, $\sum X$ denotes the total score of all responses, and n indicates the number of respondents. The results of this analysis form the basis for interpreting user acceptance and evaluating the system's contribution to improving administrative services and service quality [1], [2], [5].

RESULTS AND DISCUSSION

This section presents research results and discussions, including the development of a web-based information system and the results of a system evaluation conducted to assess user acceptance. The discussion focuses on system design, interface implementation, and analysis of the evaluation results as a basis for assessing the effectiveness of the system developed at the Nurul Hidayah Islamic Boarding School.

Information System Design Model with UML

The developed system was designed using the Unified Modeling Language (UML) to ensure that the application can meet user needs and support established business processes. The use of UML was chosen because it is able to provide a clear and structured picture of the system's functionality and the interaction between users and the system. This approach has been widely applied in the development of information systems in Islamic boarding schools and Islamic educational institutions because it can improve the clarity of the system flow and the accuracy of the functions built [9], [10]. The use case diagram of the developed system is shown in picture 2.



Picture 2. Use case Diagram

A use case diagram illustrates the interactions between system actors, namely administrators, prospective students, and parents. This diagram explains the main functions accessible to each actor and helps ensure that the system being developed meets user needs and the operational activities of the Islamic boarding school. This modeling approach is commonly used in designing information systems in Islamic educational institutions [11].

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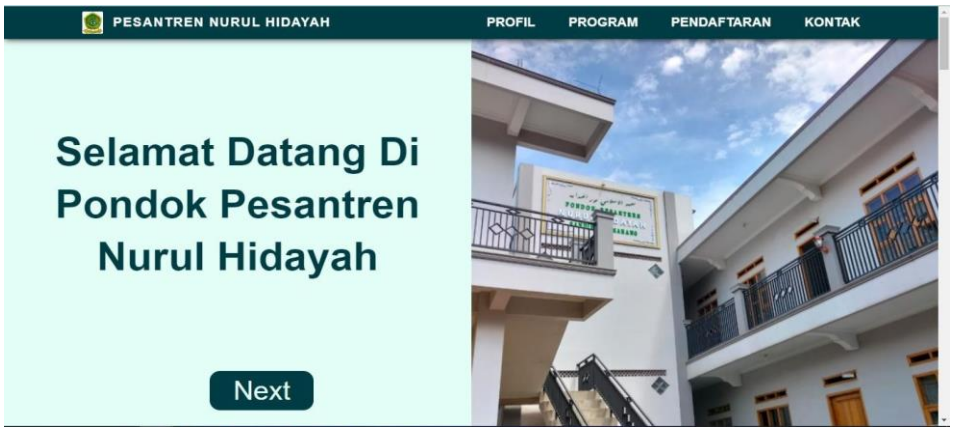
Application Program View

The user interface of the developed system was designed with a focus on simplicity and ease of use to support effective access to information and administrative services. An intuitive interface is essential to ensure that users can interact with the system efficiently without requiring extensive technical knowledge. Previous studies have indicated that clear and informative interface designs can improve usability and user experience in Islamic boarding school information systems [12], [13].

The dashboard interface, as shown in Picture 3, serves as the main entry point for users to access system features and information. The layout and menu structure are designed to facilitate straightforward navigation and enable users to obtain educational and registration information efficiently.



Picture 3. Dashboard Design

System Evaluation Using User Acceptance Testing (UAT)

The system evaluation was conducted using the User Acceptance Testing (UAT) method to measure the level of user acceptance of the web-based information system developed at the Nurul Hidayah Islamic Boarding School. The UAT method is widely used in information systems research to assess the suitability of the system to the needs and experiences of users directly [1], [2]. This evaluation involved 15 respondents who had used the system directly. Data were collected through a structured questionnaire with a five-level Likert scale, where a value of 1 indicates strongly disagree and a value of 5 indicates strongly agree [2], [5].

The evaluation focused on five main aspects, namely system usability, ease of use, clarity of information, system efficiency, and user satisfaction, which are common indicators in measuring the acceptance of web-based information systems [2], [4]. The quantitative results of the UAT testing are presented in Tablel 1. Based on Table 1, the overall average score was 4.39 out of 5, indicating that the system has a high level of user acceptance. To clarify the distribution of scores for each indicator, the evaluation results are also presented graphically, as shown in picture 4.

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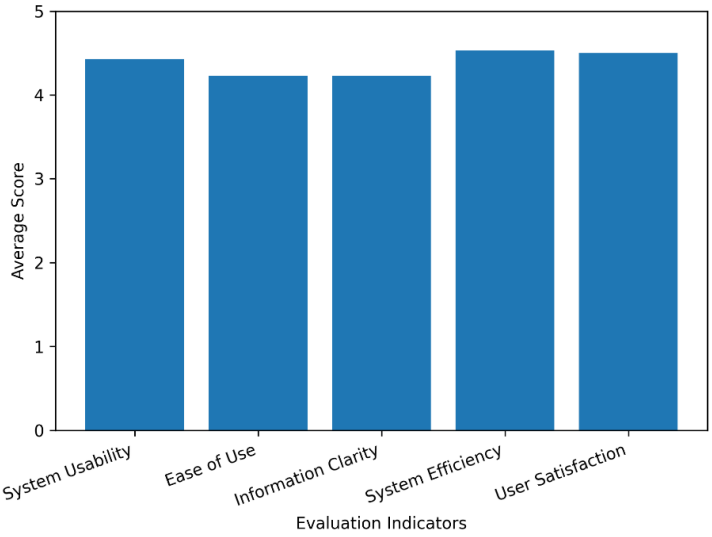
Tablel 1. User Acceptance Testing (UAT) Results

No	Indikator Evaluasi	Nilai Rata-rata
1	Kegunaan Sistem	4,43
2	Kemudahan Penggunaan	4,23
3	Kejelasan Informasi	4,23
4	Efisiensi Sistem	4,53
5	Kepuasan Pengguna	4,50
	Rata-rata Keseluruhan	4,39



Picture 4. User Acceptance Testing (UAT) Results Graph

Based on the UAT results graph, all evaluation indicators obtained an average value above 4.00. The system efficiency indicator had the highest value, which indicates that the implementation of a web-based information system was able to accelerate the administrative process and reduce the workload compared to the previous manual process. This finding is in line with previous research which stated that digitalization of the educational administration system can significantly improve operational efficiency and service quality [1], [10], [14].

Furthermore, the user satisfaction indicator shows a high value, which indicates that users feel satisfied and are willing to continue using the system. User satisfaction is an important factor in the success of information system implementation and is an indicator of the sustainability of system use in the long term [2], [4].

Meanwhile, the indicators of system usability, ease of use, and clarity of information also obtained high scores, which indicates that the system is easy to understand, easy to operate, and able to present information clearly and quickly. These results strengthen the findings of previous research that simple interface design and structured information have a positive effect on system acceptance by users [2], [15].

Overall, the results of this evaluation provide empirical data-based evidence that the developed web-based information system is able to improve service efficiency and user satisfaction in the Islamic boarding school environment. By integrating UAT-based evaluation, this research not only focuses on system development, but also provides scientific contributions through systematic user acceptance measurements [1], [2].

CONCLUSION

This study addressed the need for improving administrative services and information accessibility at Nurul Hidayah Islamic Boarding School through the design and evaluation of a web-based information system. As outlined in the introduction, the primary expectation of this research was to develop an integrated digital system capable of overcoming the limitations of manual registration processes and conventional information dissemination.

Based on the results and discussion, the developed system met these expectations. The User Acceptance Testing results demonstrated a high level of user acceptance, with an overall average score of 4.39. All evaluation indicators, including system usability, ease of use, information clarity, system efficiency, and user satisfaction, achieved positive results, confirming that the system effectively improved administrative efficiency, accelerated information access, and enhanced user satisfaction in the Islamic boarding school environment.

These findings indicate that the implementation of a web-based information system can serve as an effective solution for supporting administrative digitalization in Islamic boarding schools. Furthermore, the results of this study provide a foundation for future research, particularly in expanding system functionality, involving a larger number of users, and applying additional evaluation methods to measure long-term system performance and impact. The developed system may also be adapted and implemented in other Islamic educational institutions facing similar administrative challenges.

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