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DESIGN OF AN ANDROID-BASED NEW STUDENT AND SANTRI REGISTRATION APPLICATION AT BABUL FUTUH PANDAAN ISLAMIC BOARDING SCHOOL

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Abstract

This research aims to develop an Android-based information system application that is appealing, legitimate, practical, and effective in facilitating the registration process for new students in grades VII and X at Babul Futuh Islamic Boarding School at the beginning of the new academic year. The main objective of this application is to enhance the quality and efficiency of the New Student Admission (PPDB) process. This research will follow the waterfall or sequential linear development model, employing observation and interviews as data sources involving teachers, students, and registration committee members. Through this approach, the application will consider positive potentials, constraints, and opportunities to shape an efficient registration system. The research instrument consists of a questionnaire to be filled out by prospective students. It is expected that the outcomes of this research will yield an Android-based information system application that is appealing, legitimate, practical, and effective. This application is anticipated to strengthen communication between the boarding school's admission committee and prospective students during the registration process, ultimately leading to a positive assessment and supporting the growth of the boarding school in the future.

Keywords
Information System, Android, Registration, Waterfall.

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INTRODUCTION

Islamic boarding schools are religious educational institutions that have the main goal of producing individuals who study religion in depth. Islamic boarding schools have characteristics that set them apart from other education systems, this is primarily due to the need to maintain a culture and teaching approach based on the Qur'an, Hadith and Ijtihad. In Indonesia, there are two types of pesantren, namely kholaf and salaf. The kholaf (modern) Islamic boarding school is so named because it follows a curriculum that has been adjusted to government regulations, so that the results of education are on par with formal schools. Meanwhile, salaf (traditional) Islamic boarding schools focus more on teaching religious material and consider that general subjects have no urgency. This kind of view eventually results in sharp differences between science and religion,[1]

Registration of prospective students or new students is a series of annual activities in every educational institution, including both public and private ones. This acceptance process plays a crucial role in supporting the smooth running of teaching and learning activities in the future. In this process, interaction is established between prospective students or new students and educational institutions. Usually, when the time comes for registration, many prospective applicants go directly to educational institutions, which in turn can hinder data collection services due to the large number of applicants. In addition, the limitations of registration officers can also present obstacles in managing the data of prospective students or new students.[2]

Currently, progress in science and technology is undergoing rapid growth and is difficult for the human mind to predict on an ordinary scale. For this reason, knowledge, skills and attitudes are needed that can adapt to these developments. This is important to maintain connectivity with the ongoing transformation and evolution in the field of science and technology. Educational institutions, both formal and non-formal, both formal and informal, are an important foundation in forming individuals who have the capability to adapt to technological and information developments. All elements within these institutions have a crucial role in facing an era filled with technology and information.

The Babul Futuh Pandaan Islamic boarding school is engaged in education, both formal, namely, Madrasah Tsanawiyah and Madrasah Aliyah or non-formal, namely, Tahfidzul Qur'an and Madrasah Diniyah, as well as informally, namely, Thoriqoh Tijaniyah. In identifying problems at the Babul Futuh Islamic Boarding School regarding the registration of new students and students who still use the process manually or offline, the committee for accepting new students must also be on time in the office, therefore an Android-based application is made so that it can make it easier for santri guardians or guardians of students in carrying out the process of registering their sons and daughters, starting from filling in new student data, gathering the required requirements, making payments from home, and as a means of information.

This online registration application is designed using the Dart programming language which is integrated into the Flutter platform. The author is committed to producing an attractive and educational application interface, with the main aim of increasing user comfort while using this application, while making it user-friendly.

METHOD

Waterfall Method Stages

In carrying out this development using the waterfall method. The waterfall method is included in the software development process which has systematic

stages. An illustration of how the waterfall method actually works will be shown in the following figure:

Figure 1. Waterfall method

The following is an explanation of the stages of the waterfall method:

1. Needs Analysis

   Researchers collect information by interview techniques about existing systems for analysis. By analyzing the existing system researchers can find out the problems contained in the system. The problems that exist in the existing system are that the new student registration system still uses the old method, to carry out registration and payment transactions must be face to face.

2. Design (Design)

   After extracting information, a data structure, software architecture, and other interface designs are built. At this stage, an analysis will be carried out regarding the data structure used, the overall system flow, and the creation of an information system application design using the figma tool.

3. Implementation of the Program Code (Implementation)

   The researcher designed the program interface using the VSCode application as a text editor using the Dart Flutter and Laravel programming languages. The researcher designed the admin homepage display, admin data management display, form content display, institution profile view, participant data management display, notification display, dashboard display, announcement display, payment transaction display, payment method selection display, payment transaction management display, success display and logout view.

4. Testing(Verification)

   At this stage, the application that has been worked on by the programmer is tested to find out whether it is running according to the specified flow, and whether there are errors in the system that has been completed. This test uses

several research instruments with aspects of ISO 25010 which include aspects of functional suitability, usability, performance efficiency, reliability and maintainability.

5. **Device Implementation and Maintenance (Maintenence)**

At this stage, the application has been built and entered the application implementation stage. In implementing this application is also carried out to ensure whether the application runs smoothly. After a certain period of time, the performance of this application will be improved and development will be carried out according to user needs.[3]

Stages of Data Collection Methods

The stages of data collection can be done in various ways. Following are the stages of data collection carried out:

1. Study of literature

Literature study is the collection of data or information on an object of research from various sources such as journals, books, papers, the internet, and others. In this study, researchers searched for information relating to the application for admission of new students and students.

2. Observation

Observation is a direct observation activity carried out by the author in the Babul Futuh Pandaan Islamic Boarding School Environment. From this activity the author can get the information and data needed related to the application which is the topic of the problem raised.

3. Interview

Interviews were conducted after observation activities. where this activity is a question and answer activity carried out by the author with Asatidz, Asatidzah and several students in the Babul Futuh Islamic Boarding School Environment. This interview activity was conducted by the author to obtain information related to the application to be made.

RESULTS AND DISCUSSION

Application and System Design

Flowcharts are used to analyze, design, document and manage processes or programs in various fields. In addition, the flowchart also describes the logic flow that will be applied to the application or system to be created. This diagram visualizes how the app operates in its usage.[4]

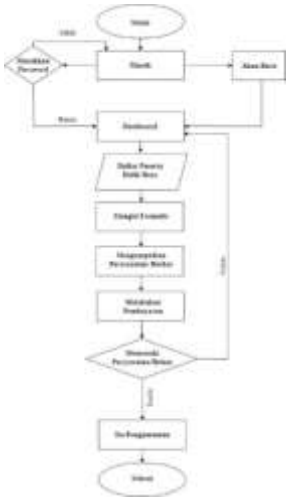

Figure 2. Flow chart

Use Case Diagrams

Use case diagrams describe how one or more actors interact with the information system being planned.[5]The following is an example of a use case diagram from the design of an android-based information system for admitting new students and students at the Babul Futuh Pandaan Islamic Boarding School. Use case diagrams can be seen in Figure 3 below:

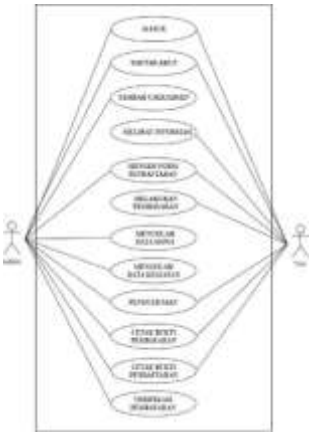

Figure 3. Use case diagrams

Database Implementation

Figure 4. Databases

The database has a very important role as a source of data storage on the server. In this context, the SQL Server Management server is used. In making the

database for the supporting software, MySQL Server is used which is integrated in the XAMPP software.[6]

Website Interface

The website interface is built using the HTML, CSS and JavaScript programming languages.[7]The development of this interface also involves the Laravel framework, PHP MyAdmin, and XAMPP as the link. The website display is as follows:

1. Login Page

   To access the admin login page, users must fill out a form consisting of input fields for username and password. After the form is filled in, the user will be able to log into the system. The appearance is as shown in Figure 5 below:

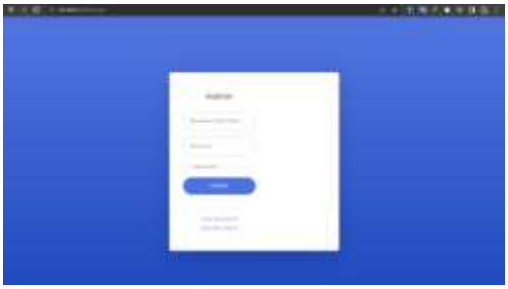

Figure 5. Login page

2. Main page

   On the main page of this application, users will be able to see information about participant data, school data, and payment data available in the system. The appearance is as shown in Figure 6 below:

Figure 6. Dashboard page

3. Participant data page

   On this page, the admin has the ability to view and delete participant data that has registered. The appearance is as shown in Figure 7 below:

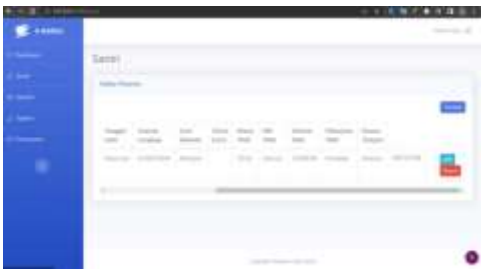

Figure 7. Participation page

2. Billing page

OnOn this page, the admin can provide information related to payments required during the registration process. The appearance is as shown in Figure 8 below:

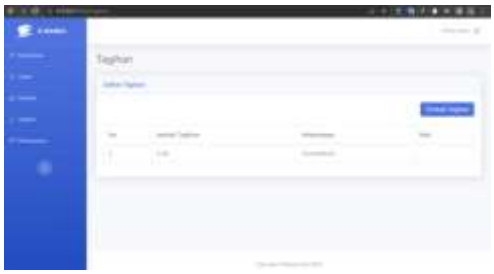

Figure 8. Billing Page

3. Payment Page

On this page, the admin provides a form for inputting payment details and payment methods. The appearance is as shown in Figures 9 and 10 below:

Figure 9. Payment Page

Figure 10. Payment Getway page

Android Interface

The interface on the smartphone is built using the Flutter UI framework, which uses the Dart programming language[8]. Display android mobile as follows:

1. Login Page

On this screen, the user will be asked to log in to the application using a combination of email and password to continue the next process. The appearance is as shown in Figure 11 below:

Figure 11. Login view

2. Dashboard page

On this page, users are given the option to choose menus that have been provided, including filling in the registration form, information about registration requirements, payment processes, institution profiles, notifications, and a registration flow guide. The appearance is as shown in Figure 12 below:

Figure 12. Dashboard View

3. Registration Form Page

In this view, users have the ability to fill in information related to personal data, parental/guardian information, as well as desired school choices. The appearance is as shown in Figure 13 below:

Figure 13. Display Registration Form

4. Payment Method Page

On this page, the payment amount is displayed along with the choice of payment method that has been chosen by the user. The appearance is as shown in Figure 14 below:

Figure 14. Payment Display

System testing

At this stage the test involves application users by filling out the questionnaire provided in order to get evidence whether the student registration application is in accordance with the desired function.[9]This test took 8 questions and consisted of 5 respondents from the students' guardians and 5 respondents from the PPDB committee of the Babul Futuh Islamic boarding school. Assessment category as follows:

Table1. Testing usability testing

Question 1	SS	S	KS	TS	STS
Is the appearance of this application attractive?	7	3	0	0	0
Percentage 94%					
Question 2	**SS**	**S**	**KS**	**TS**	**STS**
Is the use of menus or application features easy to use?	6	4	0	0	0
Percentage 92%					
Question 3	**SS**	**S**	**KS**	**TS**	**STS**
Is the application have the proper	7	3	0	0	0

function?					
	Percentage 94%				
Question 4	SS	S	KS	TS	STS
Is the view the in-app menu is easy to spot?	5	5	0	0	0
	Percentage 90%				
Question 5	SS	S	KS	TS	STS
Is the application easy to use?	5	5	0	0	0
	Percentage 90%				
Question 6	SS	S	KS	TS	STS
Can the application easy to learn?	6	4	0	0	0
	Percentage 92%				
Question 7	SS	S	KS	TS	STS
Is the application useful for user?	6	4	0	0	0
	Percentage 92%				
Question 8	SS	S	KS	TS	STS
Is the overall use of the application satisfying?	6	4	0	0	0
	Percentage 92%				
RESULTS (AVERAGE PERCENTAGE)	92%				

Percentage Usability

$$Index\,(\%) = \left(\frac{Total\ Skor}{Skor\ Maksimal}\right) x\ 100$$

= 736/8*100 = 92%

Based on the final calculation analysis, it is obtained that the percentage is 92% in the usability test. This score indicates that the quality of the software from the usability aspect is appropriate and if it is interpreted with a Likert scale included in the very good category.[10]

CONCLUSIONS

In designing an Android-based application for registration of new students and students at the Babul Futuh Pandaan Islamic Boarding School, a modern solution was successfully created which is expected to simplify and increase the efficiency of the registration process. This application has important features such as online registration forms, document uploads, information requirements, and registration status notifications. User-friendly interface design is also a concern to increase user comfort. Even so, the security of prospective students' personal data must be prioritized in implementing this application. Thorough testing is also a critical stage before the official launch.

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