

Design Of Student Payment Information Using Whatsapp Gateway At As-Salafiyyah Islamic Boarding School Asy-Syafi'iyah Tambakberas Barat Jombang Based On Website

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ABSTRACT

The development of information technology provides great opportunities to improve administrative efficiency in various fields, including education. As-Salafiyyah Asy-Syafi'iyah Islamic Boarding School, Tambakberas Barat Jombang faces challenges in managing student tuition payments, which have so far been done manually, making them less effective and prone to late notifications. This study aims to design and develop a website-based student payment information system integrated with WhatsApp Gateway to automate payment notifications to student guardians. The method used is Research and Development with the Waterfall model, including needs analysis, design, implementation using PHP and CodeIgniter, and system testing using the Black Box method. The test results show that all the main functions of the system run as expected without significant errors, including student data management, payment posts, bills, and automatic notification delivery via WhatsApp. This system has succeeded in increasing the efficiency and transparency of payment administration and facilitating communication between the Islamic boarding school and student guardians. Thus, the integration of WhatsApp Gateway into the Islamic boarding school payment information system provides a practical and effective solution to support the education process in the digital era.

Keywords: Information System, Student Payment, WhatsApp Gateway, CodeIgniter, Islamic Boarding School, Automatic Notification.

INTRODUCTION

The development of information technology is currently very rapid and has a positive impact in various fields, including education (Arridho et al., 2022). Islamic boarding schools as one of the Islamic educational institutions that have an important role in character building and religious teaching, face challenges in terms of the administration of Islamic boarding school payments for students, which are still mostly done manually. This manual system often causes delays in notifications, difficulties in tracking payments, and inefficiencies in the administration process. Utilizing information technology through a website-based information system integrated with WhatsApp Gateway is a relevant solution to overcome this problem. WhatsApp, as the most widely used instant messaging application, allows automatic and timely delivery of payment notifications and reminders to student guardians. With this system, the payment administration process becomes faster, more accurate, and more transparent.

Various previous studies have shown that the integration of WhatsApp Gateway into the payment information system can increase the efficiency of managing educational payment administration (Saputra & Safitri, 2022); (Irawan et al., 2021). Therefore, As-Salafiyyah Asy-Syafi'iyah Islamic Boarding School Tambakberas Jombang is trying to develop a website-based student payment information system integrated with WhatsApp Gateway, in order to facilitate the payment process and improve communication between the boarding school and the guardians of the students.

The formulation of the problem in this study is how to design and implement a website-based student payment information system integrated with WhatsApp Gateway at As-Salafiyyah Asy-Syafi'iyah Islamic Boarding School Tambakberas Jombang. The purpose of this study is to design and develop a system that can facilitate the payment process and provide automatic notifications to the guardians of the students.

It is hoped that this study can provide benefits in increasing the efficiency and effectiveness of payment administration in the boarding school, as well as making it easier for guardians and administrators to monitor and manage payments better.

Formulation of the problem

Based on the background, the problem of this research is How to design a sharia payment information system for students that is integrated with WhatsApp Gateway at the As-Salafiyyah Asy-Syafi'iyah Islamic Boarding School, Tambakberas, Jombang?

Research purposes

The purpose of this study is to design and implement an information system for Islamic boarding school payments of As-Salafiyyah Asy-Syafi'iyah Islamic Boarding School, Tambakberas, Jombang which is integrated with WhatsApp Gateway to simplify and expedite information on Islamic boarding school payments of students, so that the information needed will be faster and more accurate.

Benefit of Research

It is hoped that with this research, the process or payment of Islamic boarding school students at the As-Salafiyyah Asy-Syafi'iyah Tambakberas Jombang Islamic Boarding School will make it easier for guardians, administrators and students to find out information about Islamic payments.

METHOD

This study uses a research and development method (Research and Development) with a Waterfall approach. The Waterfall method was chosen because it provides systematic and sequential stages starting from needs analysis, design, implementation, testing, to system maintenance (Ningki & Noviyanti, 2023). This model is suitable for projects with clear specifications and needs, such as the development of a student payment information system based on a website integrated with WhatsApp Gateway.

Each stage in the ADDIE Model is applied sequentially in the following development is a brief explanation

a. Needs Analysis

At this stage, data collection and system needs analysis are carried out through direct observation at the As-Salafiyyah Asy-Syafi'iyah Tambakberas Jombang Islamic Boarding School and literature studies related to payment information systems and WhatsApp Gateway. The goal is to understand the ongoing payment administration process and the obstacles faced.

b. System Design

After the needs are analyzed, a system design is carried out in the form of system architecture, database design, and user interface display. The system design considers integration with the WhatsApp Gateway API so that it can send automatic notifications to student guardians.

c. Implementation

This stage includes coding the system using the PHP programming language with the CodeIgniter framework and MySQL database. The system was developed to automatically manage student data, payment schedules, and send WhatsApp notifications.

d. System Testing

Testing was carried out using the Black Box method to ensure that all system functions run according to specifications. Testing includes login, admin data input, student data management, payment posts, bills, and sending WhatsApp notifications.

e. Maintenance

After the system is implemented and tested, the maintenance stage is carried out to fix bugs, adjust the system to new needs, and improve system performance so that it remains stable and can be used optimally.

RESULT AND DISCUSSION

Based on observations and needs analysis at the As-Salafiyyah Asy-Syafi'iyah Tambakberas Jombang Islamic Boarding School, a website-based student payment information system with WhatsApp Gateway integration was successfully designed and developed. This system provides features for recording student data, managing payment schedules, managing payment posts and bills, and sending

automatic notifications via WhatsApp to student guardians. The system interface consists of a login page for admins and student guardians, a payment data management dashboard, a payment post and bill management page, and a payment transaction report page. The system uses PHP and CodeIgniter for the backend, MySQL as the database, and the WhatsApp Gateway API as the notification delivery media.

Interface Implementation

a. Login Display

The following is a display of the admin login page on the Payment Information System of the Salafiyah Asy-Syafiyyah Islamic Boarding School, which displays a page to enter an account as an Admin, Users (Guardians or Students). Can be seen in the image below:

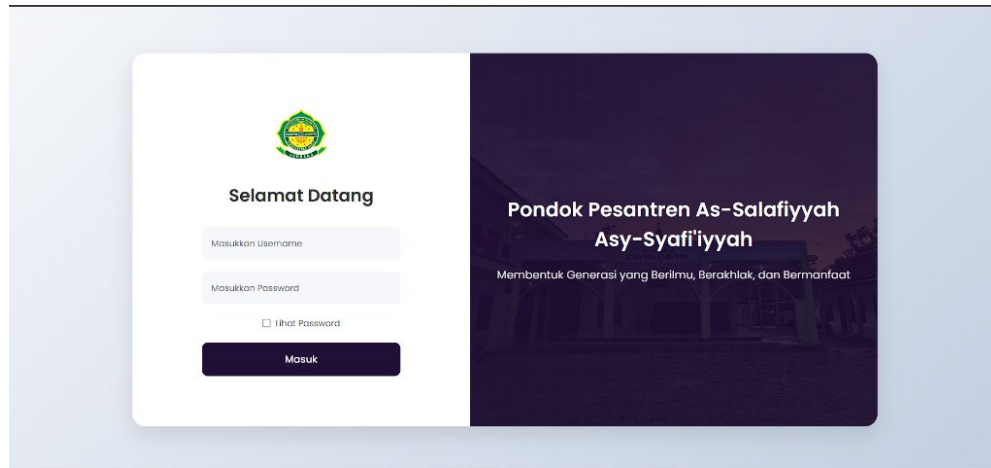


Figure 1 Login View

b. Admin Home View

The following is a display of the admin homepage on the payment information system of the As-Salafiyah Asy-Syafiyyah Islamic boarding school. It can be seen in the image below:

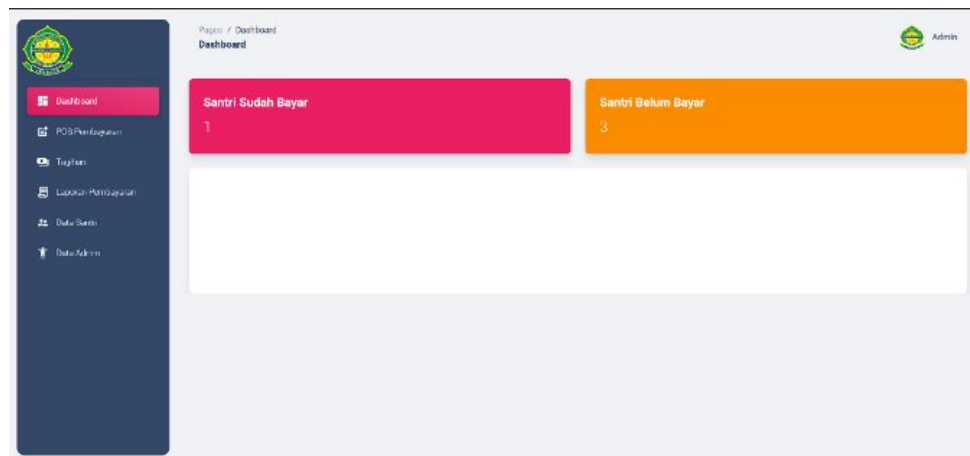


Figure 2 Dashboard View Page

c. Payment Post Page

On the Payment Post page, the Payment Type or Criteria is displayed. On the page, you can add, edit and delete payment types. The Payment Post display can be seen in the image below:

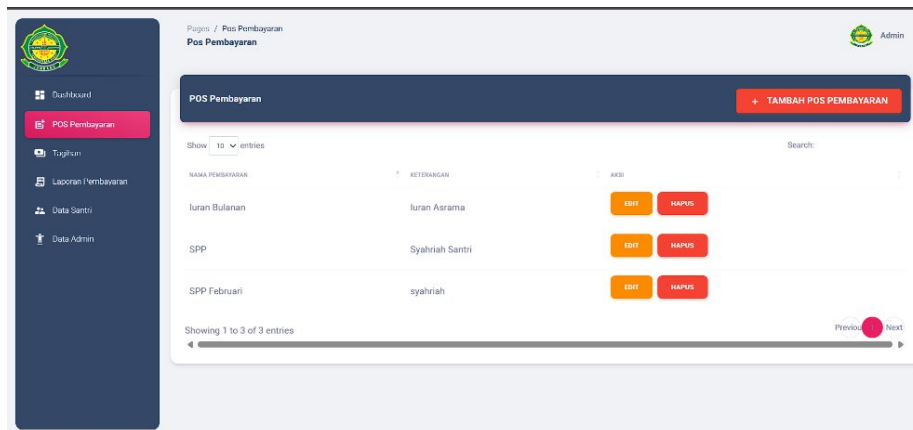


Figure 3 Payment Post Display Page

d. Billing Page

On the Bill display which is used to display the Student Payment Bill that has been added and on this page the admin can add, edit and delete bills that have been added, then the admin can also send Whatsapp message notifications to the students' guardians, the Bill page display can be seen in the image below:

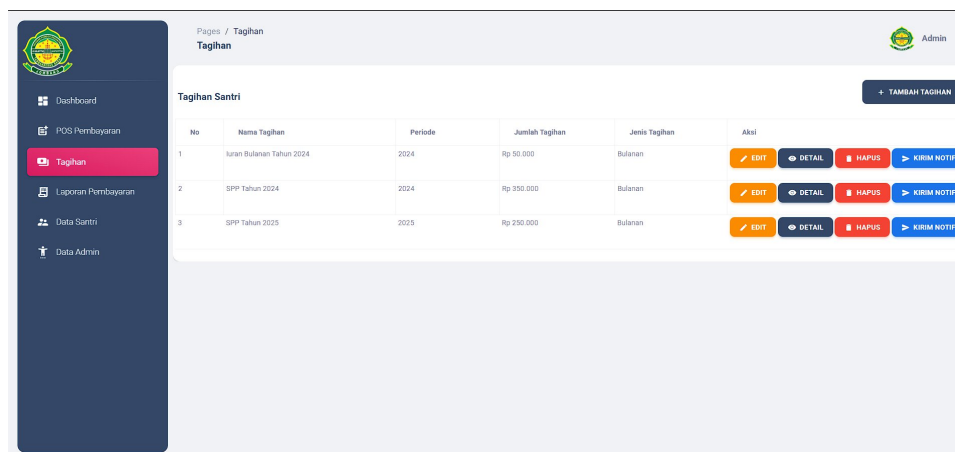


Figure 4 Billing Page

e. Payment Reports Page

This page is used to view and check incoming financial statements from payment data. It can be seen in the image below:

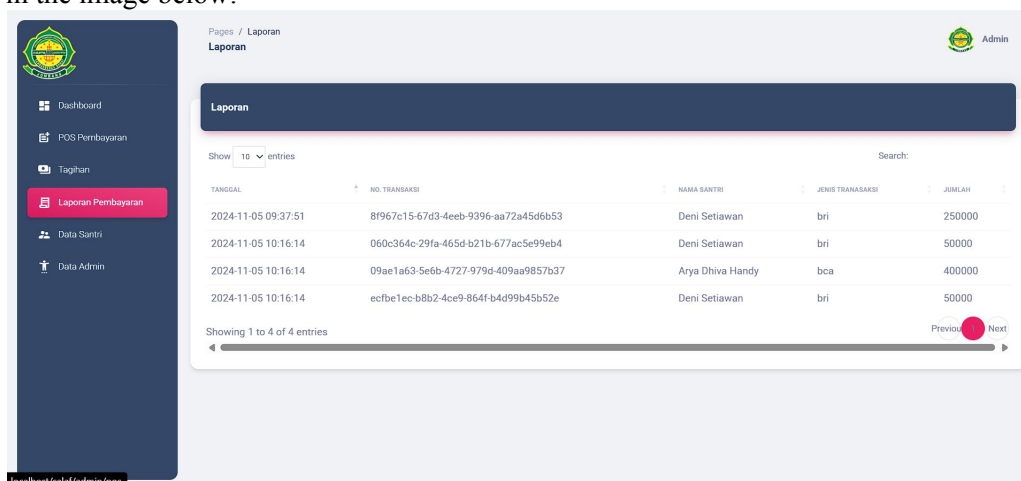


Figure 5 Payment Reports Page

f. Student Data Page

The student data page is a display to input student data. This page is managed by the admin to add and delete student data. It can be seen in the image below

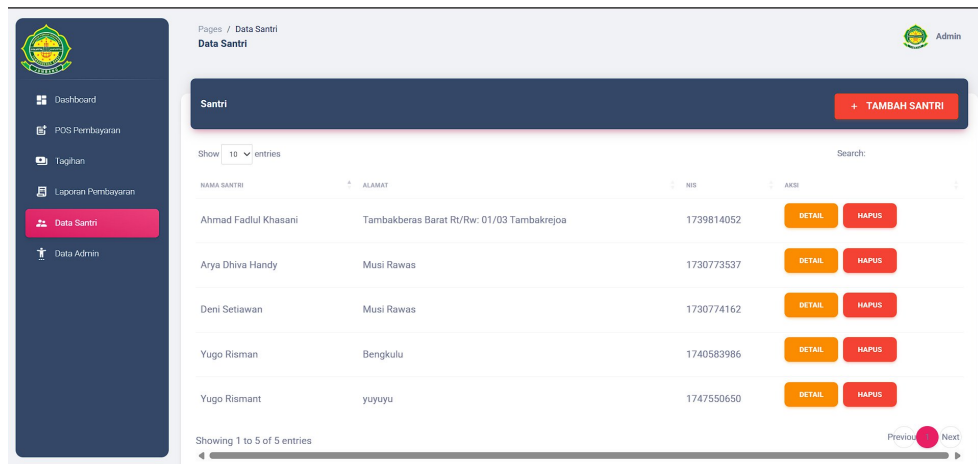
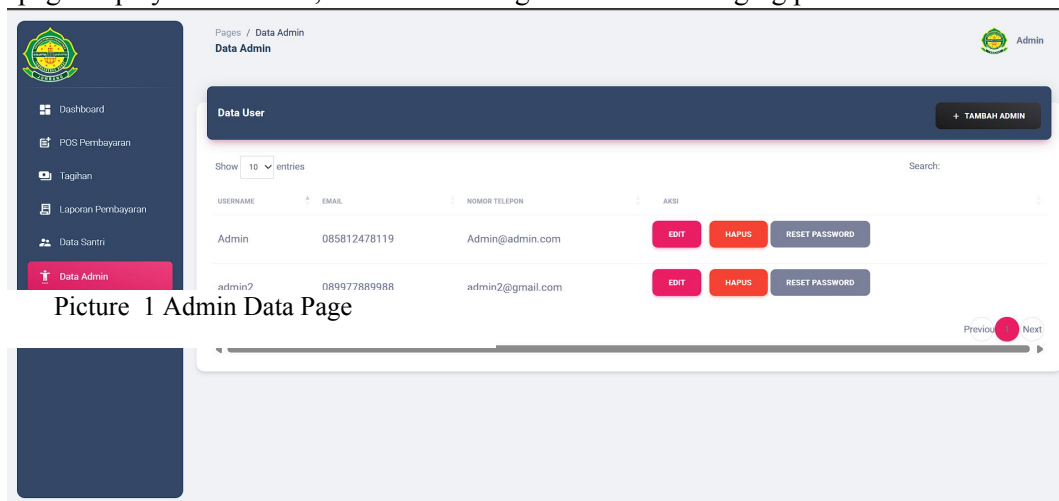


Figure 6 Student Data Page

g. Admin Data Page

This page displays admin data, as well as adding admins and changing passwords.



Picture 1 Admin Data Page

Figure 7 Admin Data Page

h. View of Sent Messages

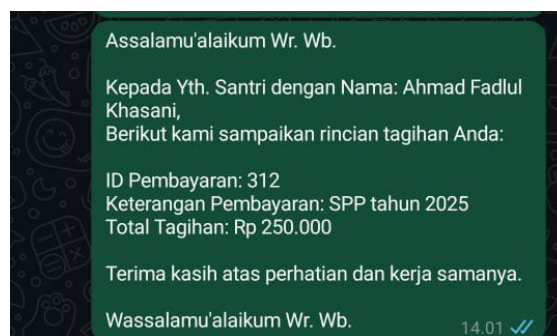


Figure 8 Sent Messages View

i. Voting Results**Table 1** Test Results

Item Pengujian	Detail Pengujian	Metode Pengujian
Login	Username, Password	Blackbox
Input Data Admin	Data Admin	Blackbox
Input Data Santri	Identitas Santri	Blackbox
Input Pos Pembayaran	Pos Pembayaran	Blackbox
Input Tagihan	Detail Tagihan	Blackbox
Kirim Notif	Notifikasi Whatsapp	Blackbox

CONCLUSIONS AND SUGGESTIONS

The implementation of a website-based student payment information system integrated with WhatsApp Gateway at the As-Salafiyah Asy-Syafi'iyah Tambakberas Barat Islamic Boarding School in Jombang has been successfully designed and implemented using PHP with the CodeIgniter framework and MySQL database. This system has passed the Black Box test with the results of all the main functions running as expected without significant errors, such as login, admin and student data management, payment post management, billing, and sending automatic notifications via WhatsApp. Notification automation increases efficiency, reduces reliance on manual methods, and speeds up and clarifies the delivery of information to guardians. The integration of WhatsApp Gateway facilitates effective communication because WhatsApp is a widely used platform by the public, so that payment administration becomes more transparent, organized, and accessible, supporting the smooth educational process in Islamic boarding schools.

For future development, it is recommended that the system be added with a real-time online payment feature through a payment gateway so that guardians of students can make payments directly after receiving notifications. System security needs to be enhanced with data encryption, protection against cyberattacks such as CSRF and SQL Injection, and multi-factor authentication security. Optimizing the delivery of WhatsApp notifications is important to improve speed and reliability, including handling messages that fail to be sent. Training and socialization for admins and guardians of students are needed so that the use of the system is optimal and they understand digital payment administration procedures. In addition, the development of a dedicated mobile application can be considered for easy access and interaction through smartphones. Finally, regular maintenance and updates of the system must be carried out so that the system remains reliable, relevant, and in accordance with technological developments

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