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Design of Website-Based SPP Payment System Using Payment Gateway Midtrans on PAUD At-Taqwa

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ABSTRACT

PAUD At-Taqwa still uses a manual tuition payment (SPP) system, where parents must come directly to the school to make payments, and transaction records are on physical cards. This method is prone to errors, delays in reporting, and lacks accessibility. In response to these issues, this study aims to design and develop a web-based SPP payment system integrated with the Midtrans payment gateway to support both online and offline transactions. This system was developed using Laravel framework, which supports structured development and efficient web application handling. The objective is to provide a more affective and efficient payment process for both parents and administrators. The method used in this research involved analyzing the current system using the SWOT analysis approach to identify strengths, weaknesses, opportunities, and threats, which then served as the fondation for system development. The system was tested using Black Box Testing to ensure all functions worked as expected. The final product allows parents to view bills, make payment online or offline, and access digital payment receipts, while administrators can manage student data, generate bills, and view real-time reports. The results indicate that the proposed system successfully improves the efficiency and accuracy of the SPP payment process at PAUD At-Taqwa. Futher development such as mobile support could enchance the system's accessibility in the future.

INTRODUCTION

The development of technology and information today takes place very quickly and significantly, such as in the progress of the internet (website), computer devices, to communication technology. This happens because of the high human need for technology as a support in various aspects of work, including in the field of education. This situation is in line with the challenges faced by the education sector today, where new policies are needed that can encourage the strengthening and expansion of the use of Information and Communication Technology (ICT) in the education process. (Revita Elinda et al., 2023).

One example is the education fee payment process which is still done manually, by recording transactions in a ledger. Tuition Contribution (SPP) is a routine contribution that must be paid by students every month as part of efforts to support the smooth running of school activities. However, this traditional SPP payment method has weaknesses, especially in terms of managing student administrative data that has not been optimally organized. (Hasan & Rindy Antika, 2023).

Manual payment methods also pose challenges for parents who may not always be able to visit the school in person, and for school administrators who must process and record each transaction individually. These inefficiencies highlight the need for a more effective and accessible system that can support digital payment processing and accurate reporting.

Prior studies have demonstrated the advantages of implementing web-based payment systems, especially those integrated with payment gateway services to enable secure and real-time transactions. Laravel, as a PHP-based web application framework, offers robust features for system development, while Midtrans provides a secure platform for processing digital payments.

Therefore, this research focused on designing and developing a website-based SPP payment system using Laravel and Midtrans. The goal of this system is to simplify the tuition payment process, reduce administrative burdens, and provide real-time access to payment information for both parents and the school.

LITERATURE REVIEW

Payment Gateway

Payment gateway is a critical infrastructure component to ensure seamless and fully protected transactions over the internet. Payment gateway is an access point into the National banking network. All online transactions must go through a payment gateway to be processed (Christudas in Mujahidin et al., 2025). In theory, the payment gateway acts

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as a bridge between the website owner and the financial institution that processes the transaction (Prasetyo in Mujahidin et al., 2025)

Midtrans

One type of payment gateway is Midtrans. Midtrans is a payment that has features to make it easier to test payments. By entering the transaction code and pressing the pay button, the transaction has been paid in an easy way (Febriyanto in Mujahidin et al., 2025)

Annual Tuition Fee (SPP)

SPP (Sumbangan Pendukung Pendidikan) is a monthly contribution or payment from students that is an obligation for students at school. The SPP payment is taken based on the agreement of the school committee meeting and the parents of the students. SPP payments are shown to support the improvement of the quality of education related to facilities and infrastructure for teaching and learning activities (Rochman et al., 2018)

Framework Laravel

Laravel is an open-source and unpaid PHP-based web framework, created by Taylor Otwell and intended for the development of web applications that use the MVC pattern. The structure of the MVC pattern in Laravel is slightly different from the structure of the MVC pattern in general. In Laravel there is routing that bridges between requests from users and controllers. So the controller does not directly receive the request (Purnama Sari & Wijanarko, 2020)

XAMPP

XAMPP is software designed for use with various operating systems. XAMPP acts as a server for the website being built. XAMPP includes various software such as PHP, MySQL and Apache. (Lesmana & Silalahi, 2022)

MySQL

MySQL is the name of a database server. The database server itself functions to manage and handle the data stored in the database. A database is a system used to organize and structure data in a structured manner. By utilizing MySQL, we can store data and access it again in an efficient and practical way (Rochman et al., 2018). According to (Purnama et al., 2020) MySQL is one type of database server that is very popular, this is because MySQL uses SQL as the basic language to access its database.

Website

A website is all the web pages contained in a domain that contain information. (Asmara, 2019)

METHOD

SWOT analysis is a method in strategic planning used by organizations to identify internal strengths and weaknesses, and evaluate opportunities and challenges from the external environment. (Zainuri & Budi Setiadi, 2023)

The data analysis technique used in this research is SWOT analysis. This analysis analyzes how to see a combination of utilizing strengths to capture opportunities, overcoming weaknesses, by taking opportunities, using strengths to avoid threats, minimizing weaknesses and avoiding threats.

Table 1. SWOT Analysis

Aspect	SWOT Factor	Explanation	Strategy
Internal	**Strength**	1. Simple process and easy for everyone to understand. 2. No device or internet connection required. 3. Low system operating costs as no technology is involved.	1. Maintain an easy-to-understand approach while integrating the new system gradually.
	Weakness	1. Prone to recording errors. 2. The data recap process takes a long time. 3. Physical SPP cards are easily lost or damaged. 4. There is no notification or reminder system for student guardians.	1. Replace manual recording with a digital system to avoid human error. 2. Provide a digital backup system to overcome card loss.
Eksternal	**Opportunity**	1. Opportunity to improve efficiency with technology. 2. parents tend to be more open to online systems. 3. Government support for digitization of education.	1. Use digitization opportunities to transition to online payment systems. 2. Educate users about the benefits of the new system slowly.

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Threat	1. Risk of data loss or corruption due to physical documents. 2. Dependence on parents' direct attendance to school. 3. Lack of neat and complete historical documentation of transactions.	1. Implement a web-based system with automated transaction history. 2. Create a payment notification system to reduce physical dependency.

RESULT

In this section will be explain the results of the research obtained, and the results will be presented in the form of images, diagram or table along with an explanation.

The Proposed Use Case Diagram

Use case diagram is a diagram that shows the relationship between actors and use cases. Use Case Diagrams illustrate the expected functionality of a system. It emphasizes "what" the system does, and not "how". A use case represents an interaction between an actor and the system. (Arianti et al., 2022)

The following is the use case diagram proposed in the web-based SPP payment system with midtrans payment gateway.

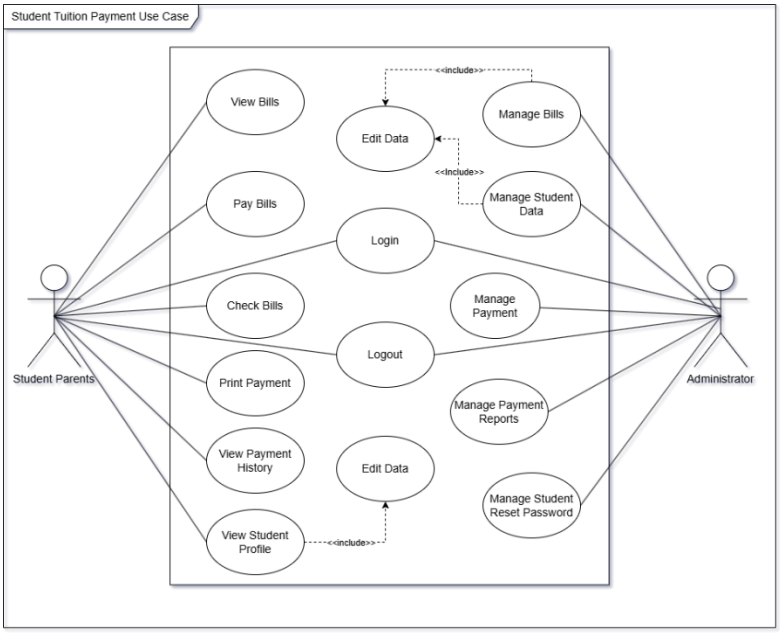

Fig. 1 Proposed Use Case Diagram

Student/Parent's Home Page

This is the main page when parents access the website for the first time. There is a login menu on the top left

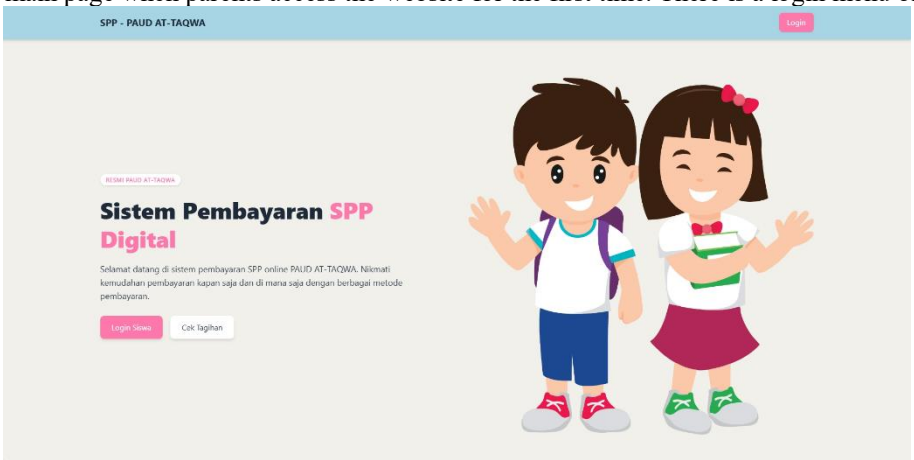

Fig. 2 Students Home Page

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Login Page Parents

This is the login page for parents. They only need to enter the student's NISN and Password to log in. There is a "remember me" feature to facilitate the login process and "forgot password" if you have forgotten your password.

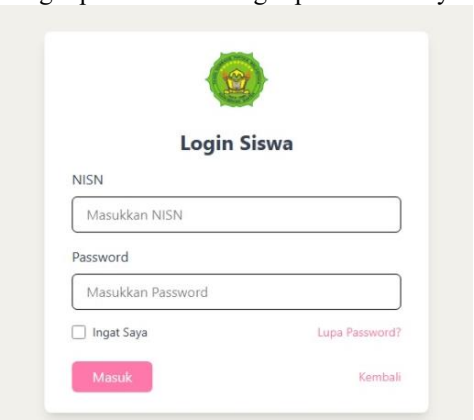

Fig. 3 Parents Login Page

Parent Dashboard View

In this section is the dashboard for parents if they have successfully logged in. There is some information on the dashboard, one of which is student and billing information.

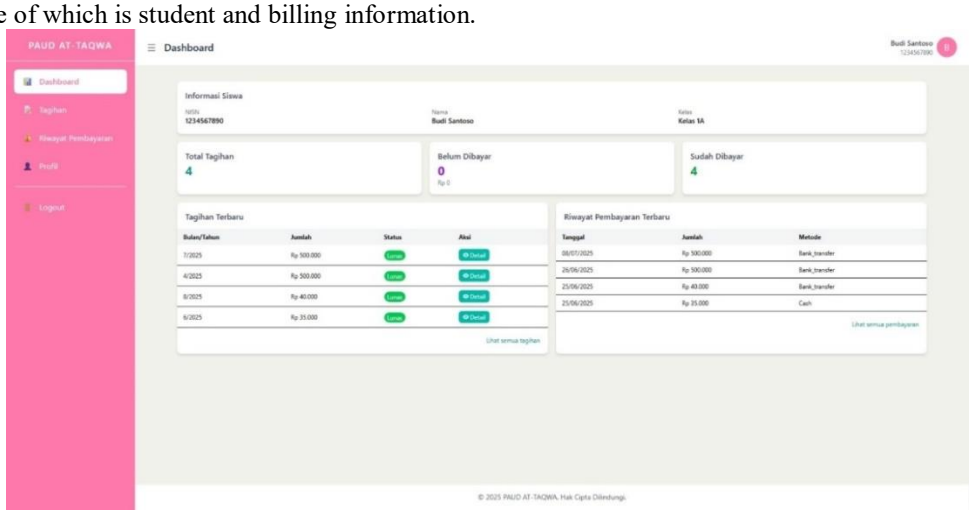

Fig. 4 Parent Dashboard View

Student Billing Page

In this section is a page to access student tuition bills. Parents can view detailed billing information and make payments online. After making a payment, parents can view their payment history.

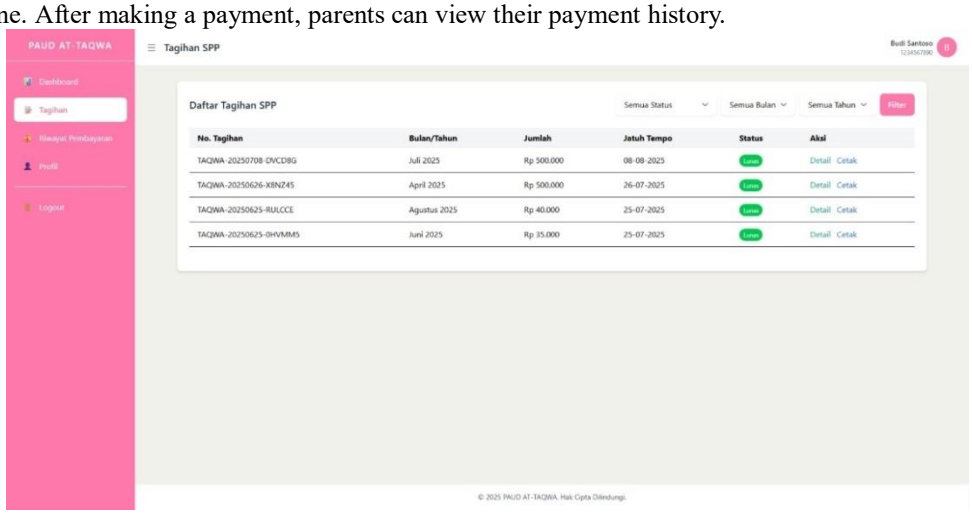

Fig. 5 Student Billing Page

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Student Payment History Page

In this section, parents can view the history of tuition payments that have been paid and can view detailed history information.

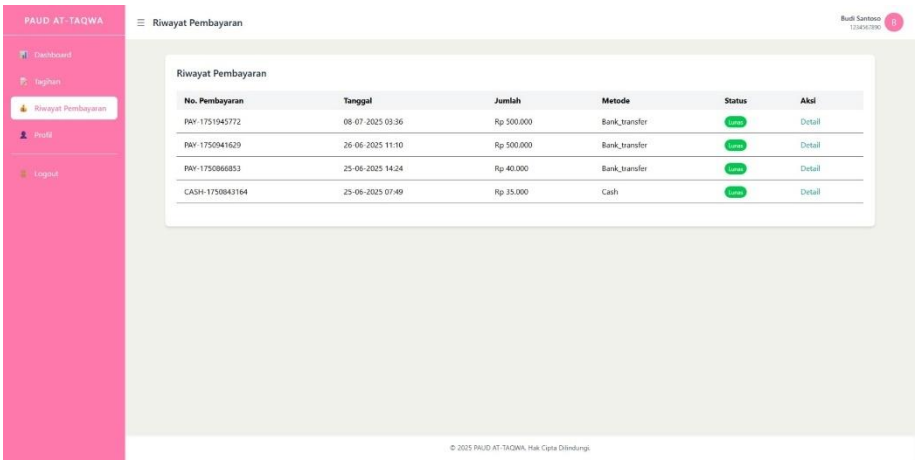

Fig. 6 Student Payment History Page

Testing

After the program is created, it is necessary to test the program to check whether the program that has been created runs well or not. The testing used is the Black Box Testing Method.

Black box testing is a software testing method that focuses on testing application functionality without paying attention to the internal structure or inner workings of the system. Testers do not need a special understanding of the program code, the internal structure of the application, or technical knowledge of programming in general. These tests are based on information external to the software, such as specifications, system requirements, and design, to develop test scenarios. These tests can cover both functional and non-functional aspects, although they generally focus more on functional testing. (Putra et al., 2020).

Table 2. Black Box Testing

No	Features Tested	Input Provided	Expected Outputs	Status
1.	Login Student/Parents	NISN and password valid	User logs in to the student dashboard	Succeed
2.	Login Admin	Username and password valid	Admin logs in to the admin dashboard	Succeed
3.	Add student data (Admin)	completed student form	Data is saved and displayed in the student table	Succeed
4.	Add student bill (Admin)	Name, amount, month and Notes	The bill appears in the student's bill list	Succeed
5.	Bulk Billing (Admin)	Select multiple students and billing months	All students get the bill as per the input	Succeed
6.	Online Payment (Midtrans)	Click the pay button → choose a payment method	Redirect to Midtrans → status changed upon completion	Succeed
7.	Print payment receipt	Click on the print payment menu	Proof appears to admin and students and can be printed	Succeed
8.	View Payment History	Click on the payment history menu	Payment list displayed according to user	Succeed
9.	Reset student password (Admin)	Click the reset button in the student data	Password reset → students can create a new password	Succeed
10.	Payment reports (Admin)	Click print report	Report file appears (Excel)	Succeed

DISCUSSION

The implementation of a web-based SPP payment system using Laravel and Midtrans successfully resolved several issues found in the previous manual system. The digital platform allowed parents to make payments online, reducing the need for physical visits and manual records. Integration with Midtrans provided secure and instant payment verification, while automated reports improved the accuracy and efficiency of administrative tasks.

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Compared to the old system, this approach significantly enhanced accessibility, minimized errors, and saved time. Overall, the research showed that modern web technologies and payment gateways can effectively improve tuition management in educational institutions like PAUD At-Taqwa.

CONCLUSION

This study concluded that the development of a website-based SPP payment system using Laravel and Midtrans provided an effective solution to the challenges of manual tuition payment processes at PAUD At-Taqwa. The system allowed parents to make secure and convenient online payments, while also simplifying administrative tasks through automatic report generation.

The research demonstrated that integrating modern web frameworks and payment gateways can significantly enhance service quality, data accuracy, and operational efficiency in educational institutions. The proposed system is a valuable reference for similar schools aiming to digitize their financial processes.

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