Journal of Artificial Intelligence and Engineering Applications

Website: https://ioinformatic.org/

15th October 2025. Vol. 5. No. 1; e-ISSN: 2808-4519

Website-Based Tourist Bus Rental Application at PT. Empat Putra Jaya Trans

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Abstract

The rapid development of information technology has had a significant impact on various aspects of life, including the transportation and rental service sectors. PT. Empat Putra Jaya Trans is a tourist bus rental service provider that until now still uses a conventional system, namely by visiting the office directly or communicating via WhatsApp messages. This manual system was considered ineffective because it made it difficult for customers to obtain complete and fast information, and slows down the company's administrative process. Therefore, this study aimed to design and develop a web-based tourism bus rental application that provides easy access to information, streamlines the booking process, and assists the company in data management and report generation. The development method used was the System Development Life Cycle (SDLC) using the waterfall model, which includes the stages of analysis, design, implementation, testing, and maintenance. The technologies used include the PHP programming language with the Laravel framework and the MySQL database. The results of the study showed that this application was able to provide main features such as account registration, bus selection, tourist destination selection, pickup point input, cost calculation, payment process, and receipt printing. In addition, the admin can manage bus data, users, tourist destinations, rentals, and transaction reports efficiently. This application was expected to improve service quality, expand market reach, and become a digitalization solution in tourism transportation rental management.

Keywords: *Rental, Website, Bus, Information System*

1. Introduction

Vacationing is something that is greatly enjoyed by all groups and elements of society, filling their free time to have fun, relax, study, engage in religious activities, or even exercise. It is undeniable that every tourist spot—whether natural, religious, or otherwise—often becomes crowded with visitors because it serves as one of the human needs for refreshing and releasing boredom. In addition, all these activities can benefit business actors and cannot be separated from the means of transportation used to support the facilities and infrastructure of vacation activities [1].

The rapid advancement of technology makes people continuously innovate in developing things around them, playing a key role in creating new opportunities, improving efficiency, and changing the way we live and interact [2]. Especially those engaged in the IT field will have broader insights and stay updated with new technological developments.

Tourist buses are one of the most popular modes of transportation, especially for large groups such as schools, government institutions, or village communities traveling together. By renting a large single-deck bus, it can accommodate up to 62 passengers, thereby reducing transportation costs. Tourist buses are not only used for tourism but also for charters or other needs as desired by the renters. In human life, transportation plays a major role in social, economic, and environmental aspects. From an economic perspective, its influence is very strong, and its significance needs to be supported by active involvement or participation of related parties, especially consumers [3].

PT. Empat Putra Jaya Trans, a company engaged in tourist bus rental services, is located at Jl. Sunan Drajat No.310, Kalikapas, Sidoharjo Village, Lamongan District, Lamongan Regency. It owns several large bus units for rent to customers. The rental system is still conducted by visiting the office directly and checking the units in the garage. Customers can place orders via WhatsApp, but complete information about the unit, rental prices, and facilities is often lacking until a reply from the admin is received.

The rental management process carried out by the admin is still done manually using Microsoft Office Excel to arrange bus schedules. Rental fees must also be determined by searching rental price data based on the bus and destination, plus additional fees depending on passenger pickup points. This process requires both time and effort. The rental receipts are still handwritten on paper notes, which are easily lost or damaged. Reporting rental activities to the company also becomes difficult due to the reliance on manual synchronization of physical notes, Excel data, and others.

Selecting a tourist bus is mandatory for customers before making a travel plan. However, bus rental activities are still largely done offline by directly visiting the office or garage to find information about rental options, available units, facilities, and rental prices.

Previous research relevant to this issue includes [4] "Design of Tourism Bus Rental System at PT Bagindo Transwisata," which produced a complex web-based model design to help administration and management in creating accurate rental reports for effective and efficient performance.
Previous research [5] "Web-Based Tourist Bus Reservation Information System at Dikma Transport," which resulted in a website application for bus reservations using the CodeIgniter framework. The system works well, can print reports, and assists the company in data management and administration.
And previous research [6] A study on the design of a web-based tourist bus rental management information system at PO. Trans Saba, which showed that implementing an online bus rental system can simplify transactions and make it easier to manage data, from bus types, fleet data, user data, to rental transaction management.
From the problems above, it is necessary to build a system that makes it easier for bus companies to provide information about buses, facilities, and rental terms, as well as for customers to easily find and receive information about buses, facilities, rentals, and prices. Ultimately, this supports the advancement of company activities through proper utilization of technology.

2. Methodology

The process of software development is the application of structured methods in developing software, which aims to systematize and organize the stages of development in order to minimize difficulties and errors up to the final stage of implementation.
This research uses the SDLC (Software Development Life Cycle) method, specifically the Waterfall model. This method is commonly used in software development because it offers a systematic and sequential approach to building software. The model begins with Requirement, Design, Implementation, Verification, and ends with continuous Maintenance once the software is completed [7].

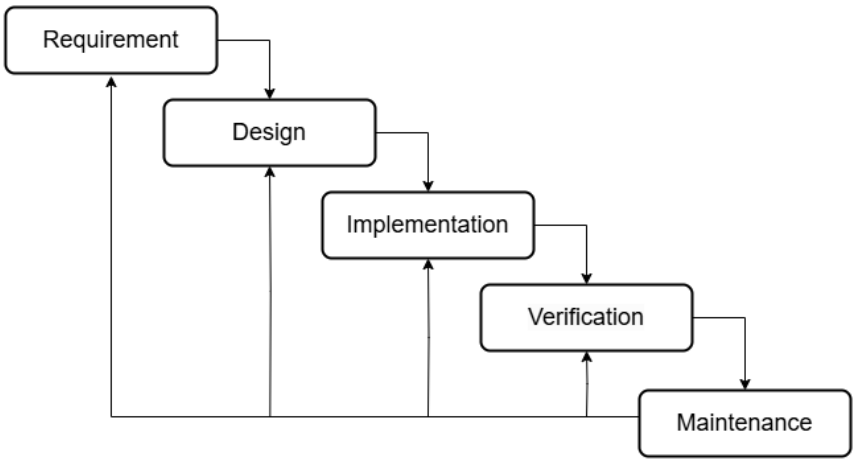

Fig. 1. Waterfall

2.1. Research Steps

The steps in developing the web-based tourist bus rental software are as follows:

1. **Requirement**
   Identifying all functional and non-functional requirements of the software. These requirements can be gathered through interviews or discussions to generate the necessary information based on system analysis.
2. **Design**
   Everything to be built will first be illustrated, including system design, database design, and interface design, in order to help define the overall architecture.
3. **Implementation**
   Implementation is the stage of building the software based on the predetermined design, using the prepared requirements.
4. **Verification**
   To ensure that all software functions can be used and work properly, verification or system testing is carried out to check for failures and errors.
5. **Maintenance**
   The final stage in this method is maintenance, which is performed continuously after the software is operational to address unforeseen issues that may hinder the software's functionality.

2.2. Data Collection Techniques

Data collection is the initial step in conducting research. In this study, the author used the interview method directly with PT. Empat Putra Jaya Trans as the research subject. Interviews were chosen because they are considered valid and effective for obtaining direct information from the relevant party.
To strengthen the literature and information requirements, the author also collected documents such as journals from previous researchers, books, and articles related to this study, serving as references. These sources cover the research method (Waterfall), web-based applications, tourist bus rental applications, and Laravel as the development framework.
The results of the data collection include: vehicle unit data available for rent, employee data (drivers and crew), information on tourist destinations that can be reached by the buses, as well as estimated rental costs and pickup fees based on the type of bus and destination. All of this data was gathered for the purpose of developing the bus rental system application.

3. Results and Discussion

3.1. Result

3.1.1. Requirements Analysis

The actors or users who can access or use the web-based tourist bus rental application at PT. Empat Putra Jaya Trans have several access rights, including:

1. **Admin (Manager)** – has access to manage system data and reports. The system requirements for the admin are as follows:
   A1 : Admin can log in
   A1.1 : Admin can enter username and password
   A2 : Admin can access the admin dashboard
   A2.1 : Admin can manage bus data
   A3.1 : Admin can manage destination data
   A4.1 : Admin can manage pickup data
   A5.1 : Admin can manage rental data
   A6 : Admin can view rental statistics
   A7 : Admin can log out
2. **User (Customer)** – general users or customers who wish to rent a bus, obtain information, and carry out rental activities. The system requirements for the user are as follows:
   P1 : User can register
   P1.1 : User can enter personal data
   P2 : User can log in
   P2.1 : User can enter username and password
   P3 : User can access the bus page
   P4 : User can access the tourism/destination page
   P5 : User can access the rental page
   P5.1 : User can enter rental data
   P5.2 : User can make payments
   P6 : User can access the rental history page
   P6.1 : User can print receipts
   P6.2 : User can change rental dates
   P6.3 : User can cancel rentals
   P7 : User can access the profile page
   P8 : User can log out

3.1.2. Design

To provide a clear picture of the software being developed, system design, database design, and interface design are required to facilitate implementation and integration of the system.
UML (Unified Modeling Language) is a visual modeling language used to design and model software systems. UML includes several models such as Use Case Diagram, Class Diagram, Sequence Diagram, and Activity Diagram, each with its own role and function[8]. UML is a modeling language expressed in the form of diagrams or graphics to visualize, specify, and document object-oriented system design and development[9].

1. Use Case Diagram
   A Use Case Diagram is a model that illustrates system requirements. These requirements are carried out by users, ensuring that the system design is clearly represented [10]. Specifically, it models the system's functions as well as the actors interacting with them [11].

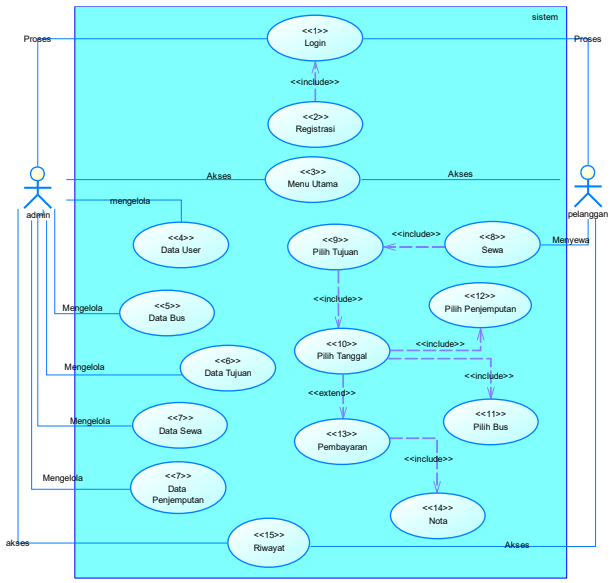

Fig. 2: Use Case Diagram of Tourist Bus Rental Application

2. Class Diagram

A Class Diagram models the static structure of a system, consisting of many classes that are interconnected. Each class has attributes and methods[12]. Attributes and operations in a Class Diagram show the relationship between design and software implementation. This diagram helps in system planning, identifying class attributes and methods, and mapping inter-class relationships[13].

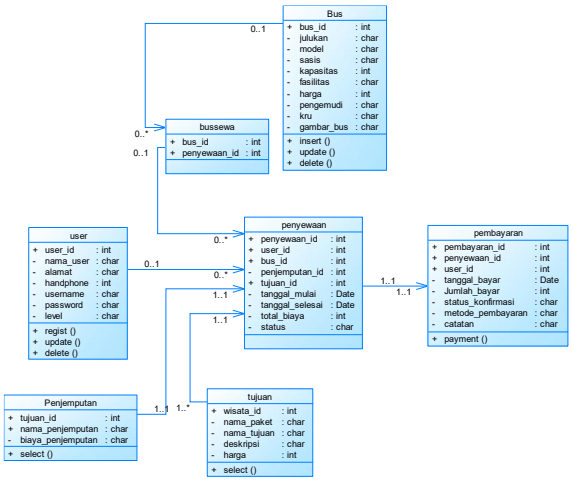

Fig. 3: Class Diagram

3. Sequence Diagram

A Sequence Diagram describes the interaction between objects in the system and the sequence of messages exchanged among them. It provides a visual representation of how the system responds to user actions or other actors[14]. For example, user activities in the rental and transaction processes are illustrated through a sequence diagram, from system access to the receipt printing output.

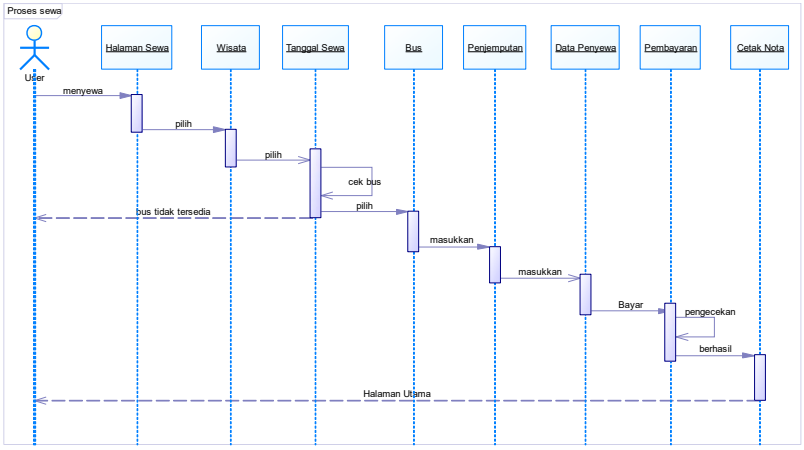

Fig. 4: Rental Sequence Diagram

4. Activity Diagram

An Activity Diagram models the workflow or sequence of activities in a system or process. It shows the order of actions, decisions, and events over time[15]. In this case, the Activity Diagram illustrates the rental process up to payment. The process begins when the user accesses the rental menu, the system displays the rental input form, and the user proceeds to payment.

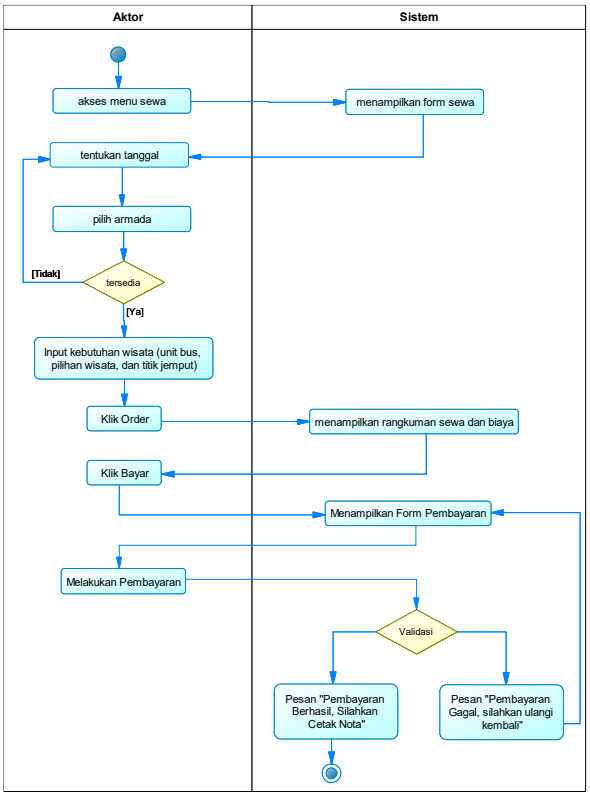

Fig. 5: Rental Activity Diagram

3.2. DISCUSSION

3.2.1. User Interface Design

1. Login Page
   The login page is the access boundary between general users, registered users, and admins. It provides system security by restricting activities and protecting user privacy.

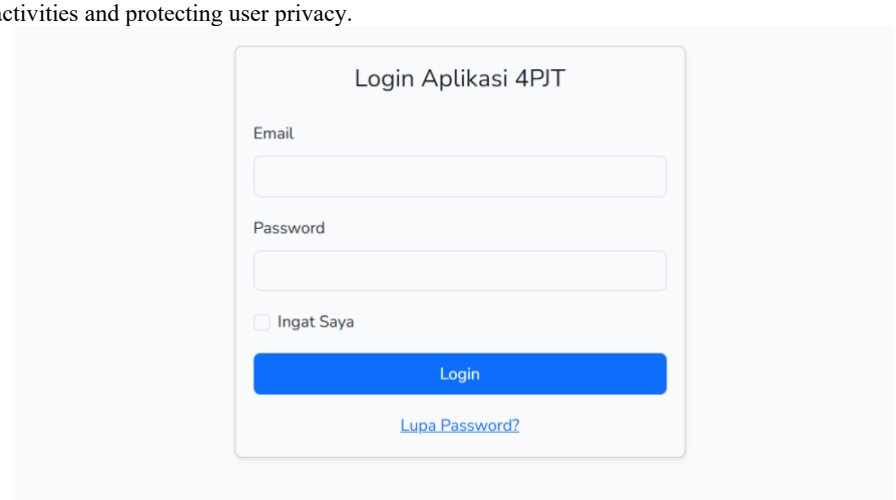

Fig. 6: Login Page

2. User Dashboard
   The user dashboard displays general information about the company and contains navigation menus for pages accessible to users..

Fig. 7: User Dashboard

3. Bus Page
This page displays bus data, including images and general facilities. Users can view detailed bus specifications by clicking the "View Details" button.

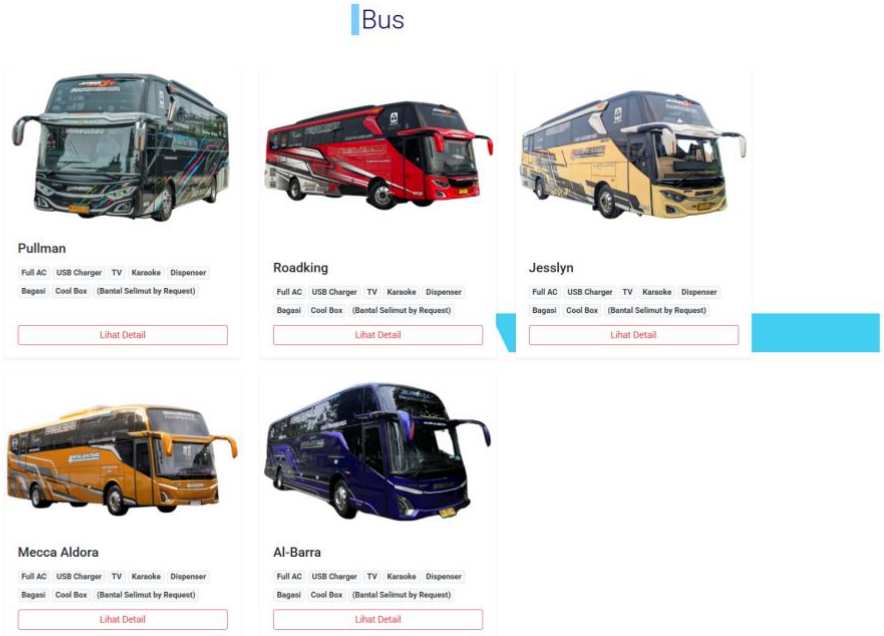

Fig. 8: Bus Page

4. Bus Detail Page
Provides more detailed bus information such as galleries, specifications, facilities, and additional bus options.

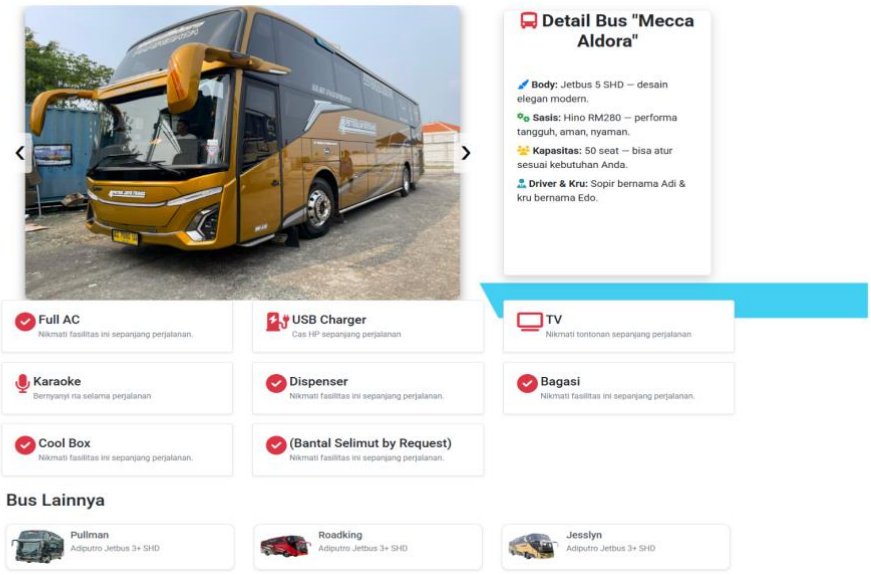

Fig. 9: Bus Detail Page

5. Destination Page
Displays available tour packages as potential rental destinations, offering options to customers who have not yet decided on a destination.

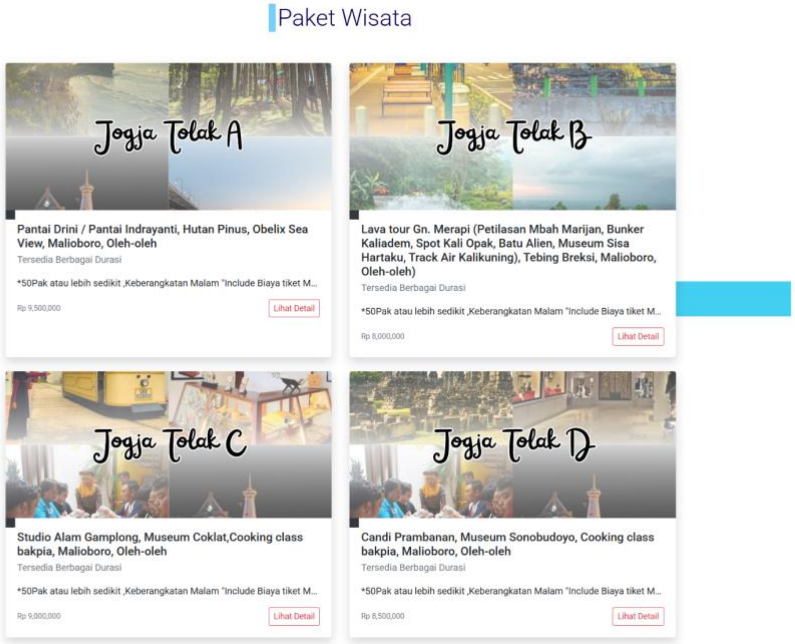

Fig. 10: Destination Page

6. Rental Page
The system's core page, where users enter personal data, destination details, and view the total cost before proceeding to payment. On this page, users can determine the percentage of the down payment that will be automatically added to the current payment.

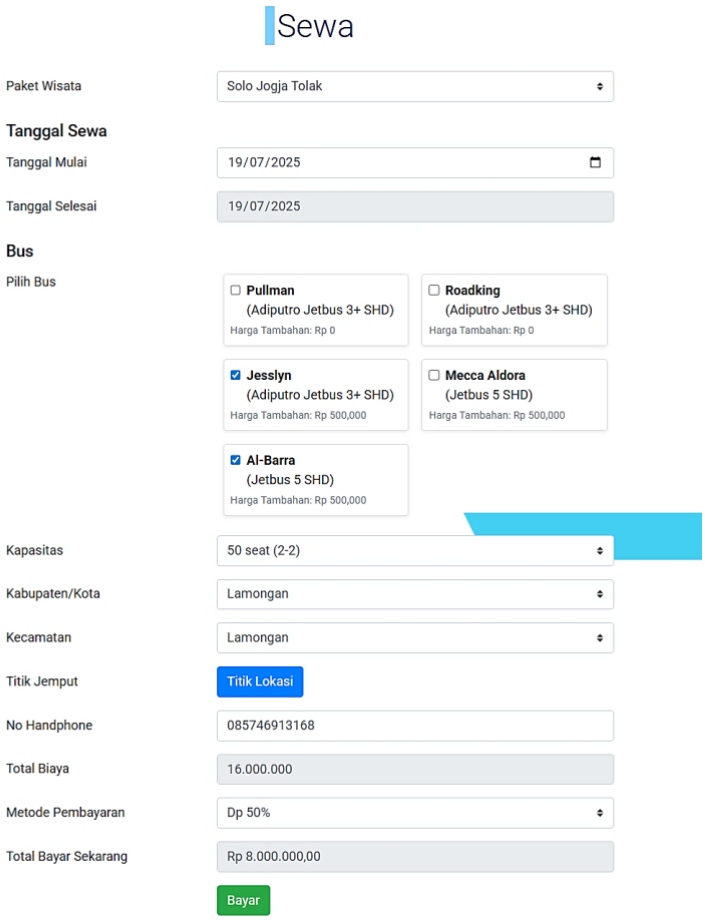

Fig. 11: Rental Page

7. Payment Page
This payment page is integrated with Midtrans API, a payment gateway that can be utilized by systems requiring payments, making it easier for users to choose their preferred payment method.

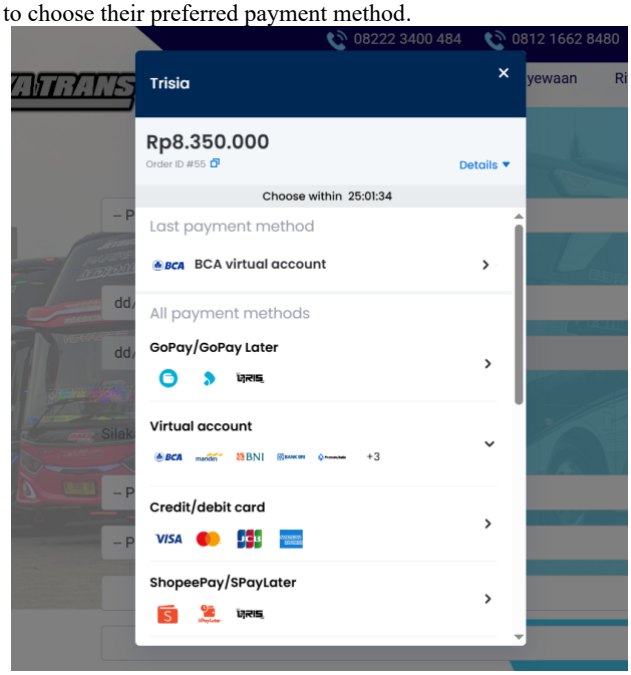

Fig. 12: Payment Page

8. Rental History Page
Displays ongoing and past rentals. Users can view details and perform actions such as editing rental dates.

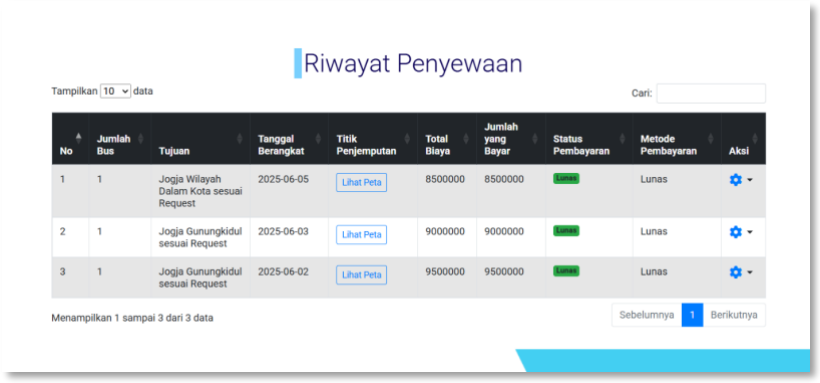

Fig. 13: Rental History Page

9. About Us Page
Provides brief company information and location details for the office and bus garage.

Fig. 14: About Us Page

10. Admin Dashboard
The landing page for admins after login, with a side navigation menu to manage buses, destinations, pickups, rentals, and user data.

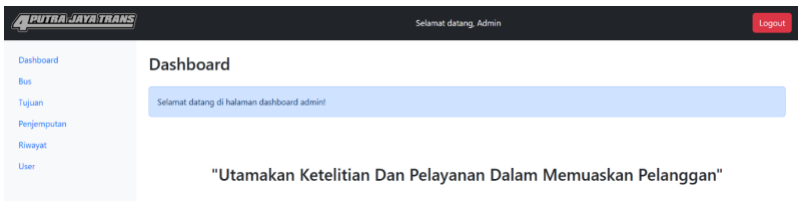

Fig. 15: Admin Dashboard

11. Data Management Page
Accessible only by admins. Allows adding, editing, or deleting buses, destinations, pickups, rentals, and user data..

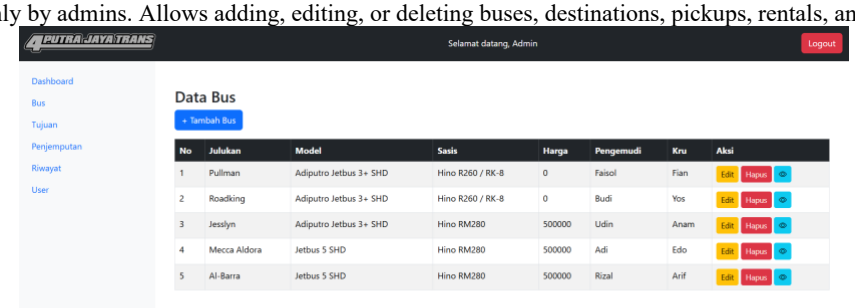

Fig. 16: Data Management Page

3.2.2. Testing

For the testing phase, black-box and white-box testing methods were applied. Testing focused on the interface and functionality of the system features to ensure the program runs as intended. The results indicate that the overall system functions properly and operates as expected.

4. Conclusion

Based on the research results presented and referring to the problem formulation discussed earlier, it can be concluded that the web-based tourist bus rental application at PT. Empat Putra Jaya Trans is able to improve the efficiency and effectiveness of the rental process. The application provides various essential features that simplify user activities, such as account registration, bus and destination selection, input of pickup points, rental cost calculation, and an integrated online payment process.
In addition, the application is capable of generating digital receipts that can be printed by customers as proof of transaction while simultaneously serving as an automatic archive for the company. The implementation of this system proves that the proper and appropriate utilization of technology can simplify previously complex activities, making them easier, more efficient, and more effective.

Acknowledgement

With deep gratitude, the author expresses thanks to Allah SWT for His mercy and blessings, so that the thesis entitled *"Website-Based Tourist Bus Rental Application at PT. Empat Putra Jaya Trans"* could be successfully completed. Appreciation is also extended to the author's parents and thesis supervisors who have provided guidance and direction throughout the preparation of this thesis, as well as to all classmates of the 2021 Informatics Engineering cohort for their encouragement and support, both in effort and ideas. The author would also like to sincerely thank PT. Empat Putra Jaya Trans for their support and cooperation in providing data, information, and the opportunity to conduct this research.

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