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Design of Reservation System in Timor Travel Kupang

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Abstract

Various challenges, such as data recording errors, confirmation delays, and lack of information transparency, are still commonly found in manual reservation systems within the transportation industry. Timor Travel Kupang, as a transportation service provider in East Nusa Tenggara, requires a digital reservation system to enhance operational efficiency and customer satisfaction. This study aims to design and develop a digital reservation system using the Agile methodology, specifically Scrum. This method is chosen for its flexibility in iterative system development and its ability to adapt features according to customer needs. The development process includes user requirements analysis, interface design, and the implementation of key features such as ticket booking, automated confirmation, and digital payments. By implementing this system, the reservation process is expected to become faster, more accurate, and capable of providing real-time access to departure information and seat availability. The results of this study are expected to enhance Timor Travel's competitiveness in the technology-based transportation industry.

Keywords: *Agile, Digital reservation, Scrum, Timor Travel, Information System*

1. Introduction

Information technology has become an inseparable part of various aspects of life, including the travel and transportation industry. The reservation process that was previously done manually has now shifted to a more practical and efficient digital system. With a digital system, customers can make reservations anytime and anywhere without having to come directly to the travel agent's office. Timor Travel Kupang, one of the intercity and interprovincial transportation service providers in East Nusa Tenggara, faces challenges in providing fast, accurate, and easily accessible reservation services to customers at any time. This is important to increase customer satisfaction and the company's competitiveness amidst increasingly tight competition [1].

The manual reservation process that has been implemented by Timor Travel has a number of weaknesses, such as data recording errors, late confirmation, and lack of transparency of schedule information and seat availability. In addition, the manual system often makes it difficult for customers to change their travel schedule or cancel tickets flexibly. These problems often cause customer dissatisfaction and have the potential to reduce the company's reputation. Therefore, a digital-based reservation system is needed that can optimize business processes while providing convenience for customers [2].

Software development methodologies have developed intensively. There are many methods in SDLC that are currently often used in the development of information system software. Software Development Life Cycle (SDLC) is an activity such as defining, developing, testing, delivering, operating, and maintaining software or an information system. One method that is often used in SDLC is the Agile method. The Agile method has advantages and disadvantages, and is also widely used in the development of information system software. Therefore, this study collects data from previous studies on the development of methodologies in the development of information systems, to determine the agile methodology in SDLC [3].

The design process of this reservation system will begin with an analysis of user needs, followed by designing the interface and implementing key features such as ticket booking, automatic confirmation, and digital payments. Development will be carried out repeatedly to ensure that each feature runs optimally and in accordance with customer needs. By implementing the Agile method in the development of the Timor Travel Kupang Reservation System, it is hoped that the ticket booking process will be faster, more accurate, and more efficient, and will be able to increase customer satisfaction in using this transportation service [4].

2. Methodology

The method used in this study is the Agile method. The Agile method is:

Fig. 1: Agile Method

The stages of the Agile method can be explained as follows:

a. Reqruitments; The stage in requirements aims to identify and understand the needs of stakeholders and users. At this stage, intensive discussions are held to collect project requirements, define the product backlog (list of features or tasks), and prioritize the backlog based on business value, risk, and urgency. The result of this stage is the product backlog which is the basis for the next iteration.
b. Design; The stage in design aims to design a technical solution that will be used in development. The team creates an initial design that is simple but sufficient to support the coding process. Technical discussions are often held to determine the best technology, architecture, or approach. If necessary, a prototype is created to ensure the feasibility of the solution. Agile design is usually flexible to allow for adjustments in future iterations.
c. Development; The stage in development is the process of developing features or solutions based on the backlog and designs that have been created. At this stage, developers write code, integrate with the main repository, and run code reviews to ensure code quality. The team works iteratively, completing little by little the features that have been prioritized in the backlog.
d. Testing; The testing stage aims to ensure that the developed features are in accordance with the needs and are free from bugs. Various types of testing are carried out, such as unit testing, integration testing, and user acceptance testing. If bugs or problems are found, the developer will fix them until the feature is ready to be implemented.
e. Deployment; The deployment stage is the process of implementing the development results to the production environment. The team ensures that the features or products released can be accessed and used by users. At this stage, final testing is carried out to ensure that all features function properly and meet user expectations. Deployment is often carried out in stages to minimize risk.
f. Review; The review stage is the process of evaluating the work results of the completed iteration. The team holds a sprint review to present the completed features to stakeholders and gather feedback. In addition, a retrospective is carried out to assess what went well, what needs to be fixed, and how to improve team effectiveness in the next iteration. The results of this stage are used to prepare the next iteration plan.

3. Result and Discussion

3.1. Analysis system

System analysis is the initial process in system development that aims to identify user needs and understand the workflow of the current system. In the context of developing a reservation system at Timor Travel Kupang, system analysis is carried out to identify problems in the manual reservation process, such as late confirmation, recording errors, and lack of information transparency. Through this system analysis, a clear picture is obtained regarding the features needed by users and the business processes that must be accommodated by the digital system to be built.

3.2. Design

3.2.1. Use case diagram

This Admin Use Case Diagram is a use case diagram that shows the interaction between the "Admin" actor and the data management system. The admin has several main tasks, such as managing admin data, customer data, travel data, transaction data, and payment methods. All of these activities depend on the login process first, which is the main requirement to access these functions. The include relationship shows that each management function requires a login step first in order to be executed. This diagram provides a simple overview of the admin role and the main features of the system.

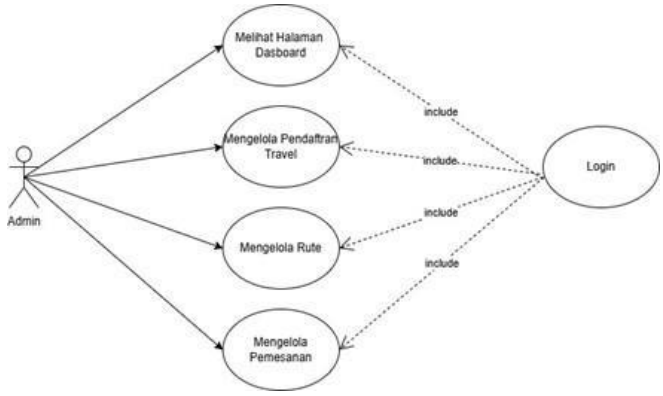

Fig. 2: Admin Use Case Diagram

Customer Use Case Diagram Below is a use case diagram for a web-based application, showing the functions that can be performed by the admin and User. The admin can manage payment data, user status, and ticket orders, while the User can register, select ticket orders, and pay. After the payment is verified, the User will receive the ticket order that has been ordered.

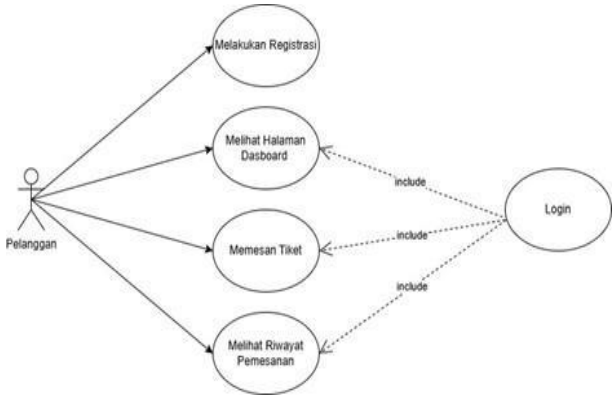

Fig 1 : Customer Use Case Diagram

3.2.2. Entity relation diagram

Entity relation diagram is a diagram used to model the relationship between entities in a database. ERD helps visualize the data structure, including entities, attributes, and relationships between entities, making it easier to design a structured and efficient database system.

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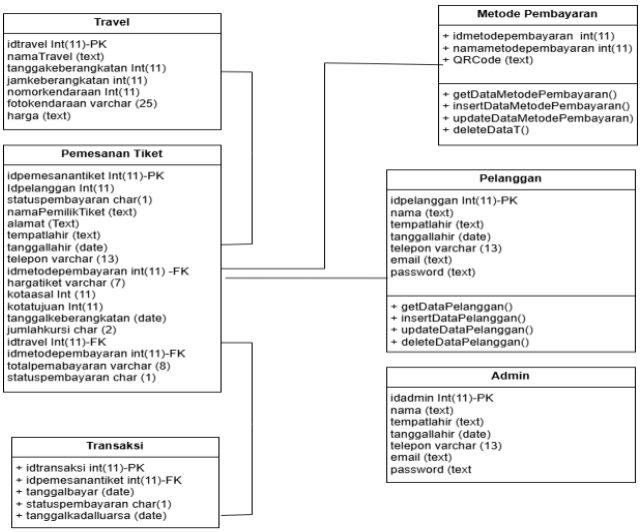

Fig. 2: Entity Relationship Diagram

3.3. System Implementation

The implementation of the reservation system at Timor Travel Kupang aims to make it easier for customers to book travel tickets online and to help management manage reservation data in a more structured and efficient manner. With this system, it is expected that Timor Travel Kupang can improve operational efficiency and provide faster and more professional service to customers.

1. Login Page
   The Timor Travel Kupang login page display consists of a simple form with two input columns for email and password, a striking green login button, and a registration link at the bottom for new users.
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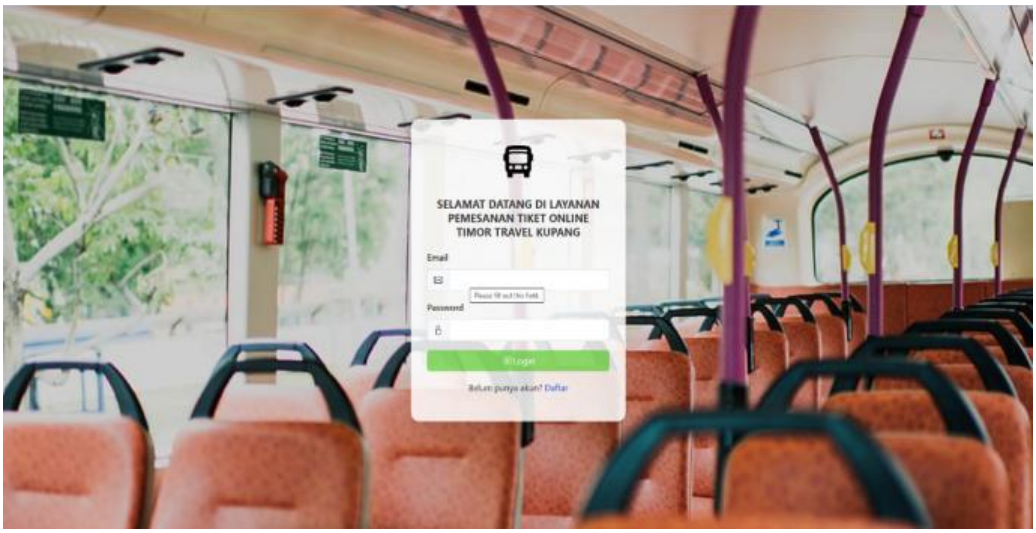

Fig. 5: Login Page

2. Admin Home Page
   The Timor Travel admin home page display consists of three main menu cards, each of which displays an icon, title, short description, and a blue "Manage" button to access the Travel Registration, Manage Route, and Manage Booking features, as well as a yellow logout button to exit the system.
   .

Fig. 3: Admin Home Page

3. Travel Registration Page
   The travel registration page displays a complete input form to enter bus data such as car name, police number, capacity, type, driver name, vehicle photo, and travel route, as well as a green "Add Bus" button to add the data and a data table below it that displays a list of buses that have been registered complete with the "Edit" and "Delete" action buttons.

Fig. 7: Travel Registration Page

4. Travel Edit Page
   The travel edit page displays a form that allows the admin to update travel vehicle data, such as car name, police number, capacity, bus type, driver name, and change the car photo, with a green "Save Changes" button at the bottom and a "Back" button to cancel or exit the page.

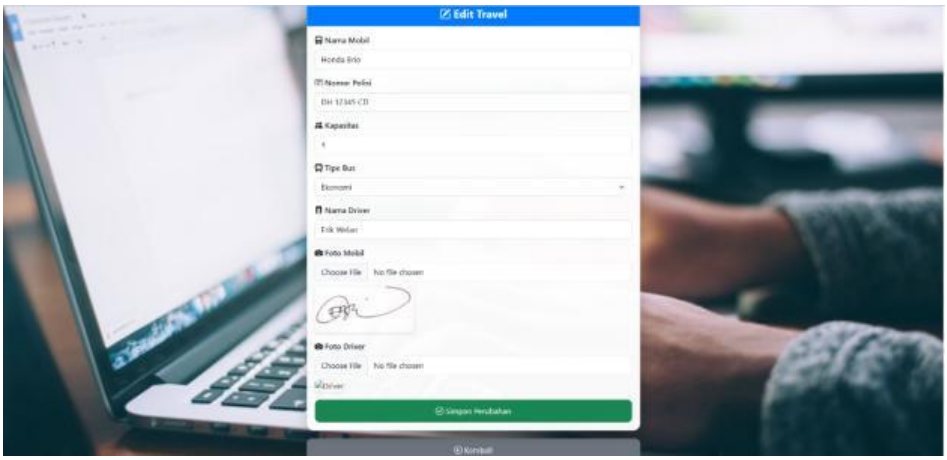

Fig. 8: Travel Edit Page

5. Route List Page
   This route list page contains a list of travel routes that include information on origin, destination, and price, and provides buttons to add new routes or return to the previous page, making it easier for admins to manage travel route data.

Fig. 9: Route List Page

6. Add New Route
   This "Add New Route" page allows the admin to add new travel route data by filling in the origin, destination, price information, and providing a button to save the route data or return to the previous page, thus supporting the process of managing travel schedules and routes.

Fig. 10: Add New Route

7. Edit Route Page
   The edit route page displays a form that allows the admin to edit the route list data, such as origin, destination, and price, and there is a green "Save Changes" button at the bottom and a "Back" button to cancel or exit the page.

Fig. 11: Edit Route Page

8. Travel Ticket Booking Page
   This travel ticket booking page displays a list of bookings from various customers for travel routes such as Kupang–Atambua, Kupang–Kefa, and Kupang–Soe. The information provided includes the name of the booker, route name, number of tickets, price per ticket, total price, booking code, booking status (such as Confirmed, Pending, or Cancelled), departure date, proof of payment, and additional notes from the travel agency. Each entry has the option to view proof of payment, edit data, or delete the booking.
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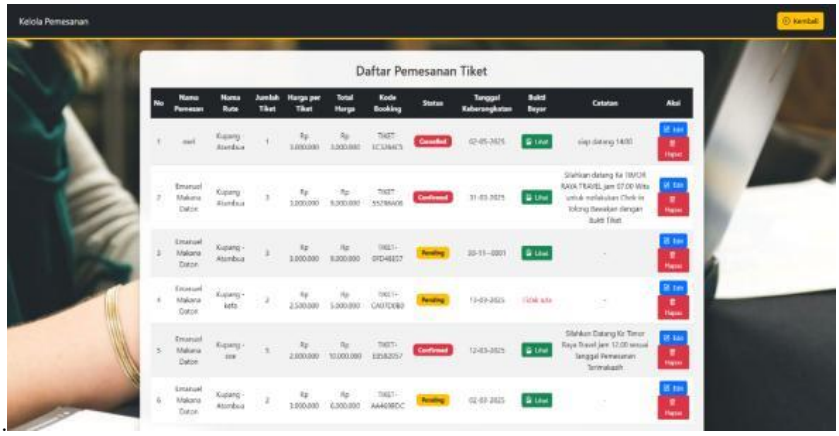

Fig. 12: Travel Ticket Booking Page

9. Travel Ticket Booking Edit Page
   This travel ticket booking edit page functions to allow admins to change the booking status of a ticket without changing other data. The only part that can be modified is the dropdown menu for Booking Status, so admins can update the status to Confirmed, Pending, or Cancelled as needed. After the status change is made, admins can save it via the “Save Changes” button.

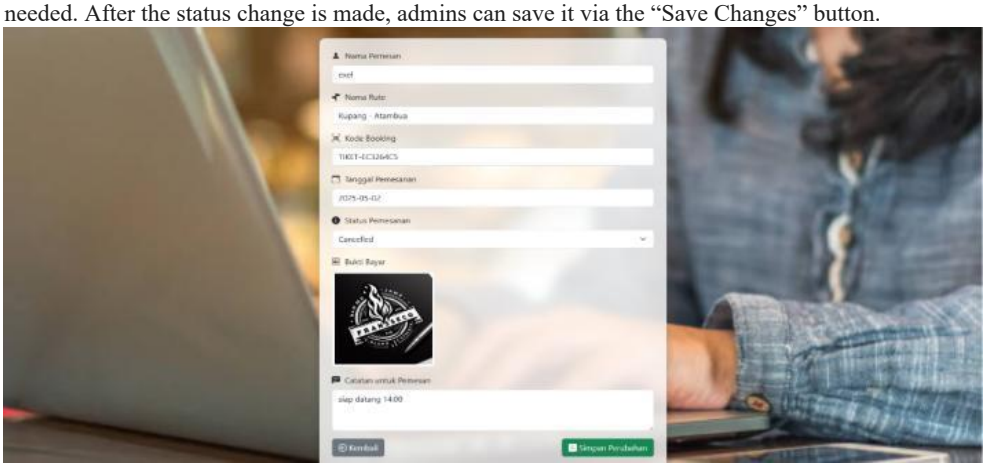

Fig. 13: Travel Ticket Booking Edit Page

10. Customer Home Page
    This customer home page is the main display after the user successfully logs in to the travel ticket booking system, where the user will be greeted with a personal greeting using their account name. On this page there are two main buttons that are easy to access, namely "Book Tickets" which directs users to make travel ticket reservations, and "Booking History" which allows users to see a list of all the reservations they have ever made.

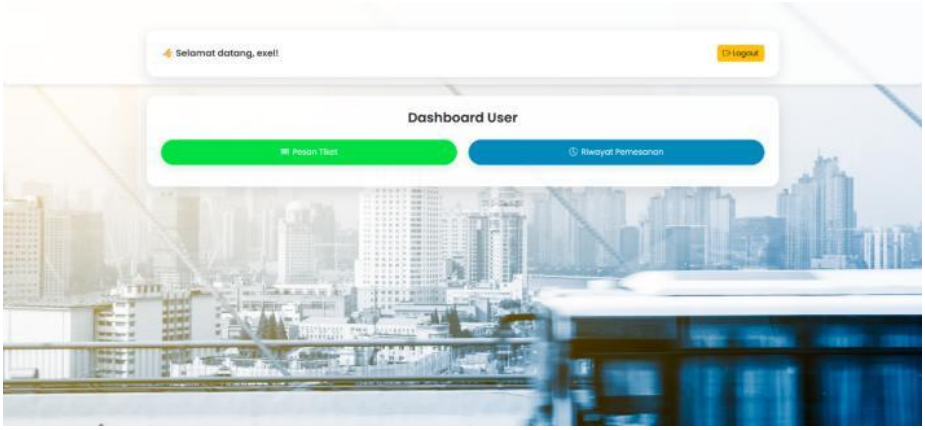

Fig. 14: Customer Home Page

11. Ticket Booking Page
    Ticket booking page to make it easier for users to purchase travel tickets, where users can choose the desired travel route, determine the departure date, fill in the number of tickets to be ordered, and see the total price to be paid. In addition, users are also asked to choose an available payment method before pressing the "Book Now" button to complete the transaction.

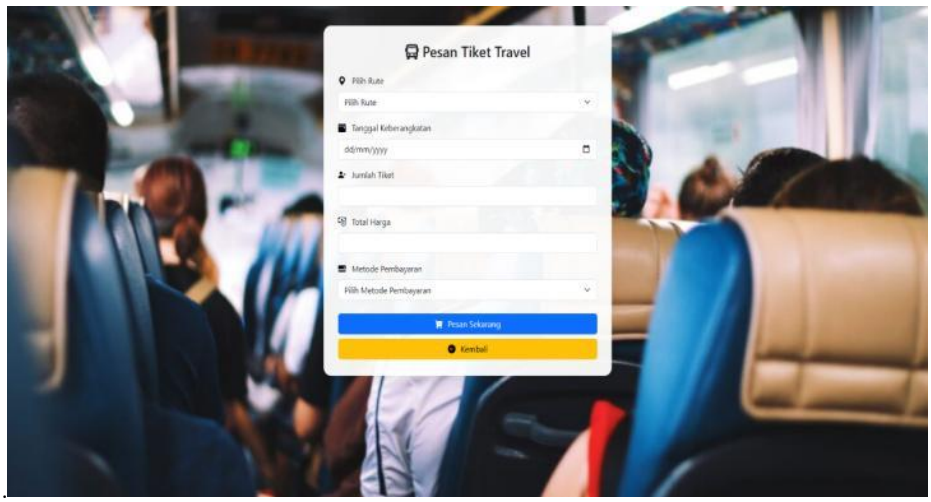

Fig. 15: Ticket Booking Page

12. Ticket Booking Page
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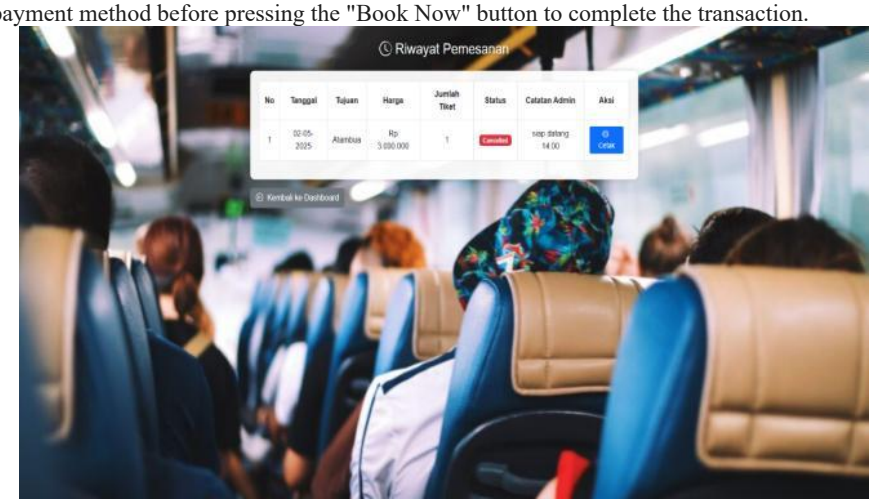

Fig. 16: Page Ticket Booking Page

4. Conclusion

This study successfully built Based on the design and construction of a digital reservation system for Timor Travel Kupang, it can be concluded that this system has succeeded in increasing the efficiency of the reservation process which was previously done manually. With this digital system, the booking process becomes faster, more accurate, and easier for customers to access. In addition, the provision of real-time travel schedule and seat availability information can increase transparency and customer trust in Timor Travel services. Customers can directly find out the departure schedule and number of seats available, making it easier to make decisions when making reservations.

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