Shikai: Application for Bus Rental in North Sulawesi

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ABSTRACT

In daily life, humans are inseparable from the need for transportation. Whether it is public or private transportation, two-wheeled or four-wheeled, these modes of transport have become commonplace for the people of Indonesia. As times progress and human needs evolve, the role of transportation becomes increasingly significant, resulting in the continuous growth of businesses in the transportation sector. Transportation companies are constantly competing to introduce various innovations that can attract public interest to use the services they offer. One of the essential transportation-related businesses that plays a significant role in serving the community is the vehicle rental service. Bus rental services in North Sulawesi, however, remain relatively inefficient. Some still rely on platforms like Facebook, WhatsApp, or other applications for managing online bus rentals, which is considered cumbersome and less efficient in finding vehicles. Therefore, the developer aims to create an Android-based application for bus rental service providers and customers looking to rent buses. This application is designed to facilitate both parties, allowing bus rental service providers to post detailed information about their buses. In this research, the prototyping process method was employed, supported by software tools such as React Native, Figma, and Firebase. The results of this research show that the developed application can assist in improving the efficiency of bus rentals in North Sulawesi.

Keywords: Bus Rental, North Sulawesi, Application

INTRODUCTION

In daily life, humans are inseparable from the need for transportation. Whether it be public or private transportation, two-wheeled or four-wheeled, it has become a common aspect of life for the Indonesian people. The origin of the word "transportation" can be traced back to Latin, specifically from the word "transportare." The part "trans" means "across" or "to the other side," while "portare" means "to carry" or "to transport something from one place to another or to the other side." Therefore, transportation refers to the process of carrying or moving goods or people from one place to a different destination, often across a distance (Rasi, 2014). Transportation plays a vital role in facilitating the movement of goods and people across distant locations. Its critical function makes transportation a key determinant in spatial interactions between regions, holding a strategic and undeniable position in supporting the development of an area. The growth of a region is heavily influenced by the dynamics of goods and people moving between it and other regions. As goods and people move between regions, economic activities between them can proceed smoothly, positioning transportation as a primary driver of growth and prosperity.

As times evolve and human needs grow, the role of transportation has become increasingly important, leading to the continuous rise of businesses in the transportation sector. Transportation companies continue to compete, constantly innovating to capture public interest and attract customers to use their services (Bahrun et al, 2022). One key business in the transportation sector that plays a vital role in serving the community is vehicle rental services. In daily life, agreements are also an essential part of human interactions. These agreements can be made formally in writing or informally, such as in the case of rental agreements. Rental agreements benefit both parties— the renter and the person renting out the service or item. The renter benefits from the use of the rented goods or services, while the provider profits from the agreed-upon rental payment. The clarity and consistency of legal regulations are essential to ensuring that the agreement proceeds as intended by both parties and helps prevent future disputes. In the legal context, entering into an agreement requires responsibility, diligence, and adherence to the agreed-upon terms (Nindito and Hartono, 2020). Vehicle rental businesses are considered highly profitable, making them a favorite among entrepreneurs looking to provide goods and services to meet the transportation needs of individuals and companies. Through vehicle rental services, people can quickly meet their transportation needs, while companies benefit from the flexibility and convenience in their operations. Vehicle rental agreements are initiated through a contract between the rental service provider and individuals or companies that require these services. These agreements typically include provisions regarding rental duration and any guarantees or collateral required for the rental process. These vehicle rental agreements are accessible to a wide range of customers, demonstrating the flexibility of this service in meeting the needs of different types of clients (Nindito and Hartono, 2020). When renting vehicles, customers must consider important factors, such as the number of passengers and the vehicle's capacity. This can become quite complex if the group size exceeds ten people, as the available vehicle options may be limited. To address this issue, customers can rent vehicles with larger capacities, such as buses. In the province of North Sulawesi, there is significant demand for transportation services, including bus rentals. Bus rental services play an essential role in meeting the needs for mass transportation for tourism, special events, group travel, and particularly for tourists visiting North Sulawesi. Bus rental services in North Sulawesi, however, are still not efficient, as many businesses still rely on platforms such as Facebook, WhatsApp, or other applications to facilitate bus rentals. These methods are often cumbersome, inefficient, and time-consuming, especially when the bus that a customer wants to rent does not meet their needs, requiring further search efforts. Problems associated with the current rental system include long wait times to find a suitable bus and inconsistent rental price information. Using third-party applications like Facebook or WhatsApp may expose customers to criminal risks, such as fraud or organized robberies, since the rental process is not conducted officially. In response to these issues, the developer aims to create an Android-based application for bus rental service providers and customers looking to rent buses. This application will facilitate both parties by allowing bus rental service providers to post detailed information about their buses (such as the bus's condition, capacity, facilities, price, etc.). Customers who want to rent a bus can select the bus that meets their needs and contact the bus owner directly. Based on this background, the researcher will design an Android-based bus rental application that will make it easier for tourists to travel by providing access to bus rentals.

LITERATURE REVIEW

Rental

Rental refers to an agreement or contract in which the owner of an asset, property, or service lends it to another party for use over a specified period, in exchange for monetary compensation or other agreed-upon terms. This process allows the borrower (renter) to utilize and access the asset or property without obtaining ownership, provided they fulfill the financial obligations as stipulated in the contract (Elmanzah et al, 2023). The terms and conditions of such agreements typically cover various aspects, including rental duration, rental fees, usage conditions, maintenance responsibilities, and the rights and obligations of both parties. Examples of rentals include vehicle rentals (cars, bicycles, or motorcycles), property rentals (apartments, houses, or offices), equipment rentals (construction tools, household appliances), and service rentals (cleaning services, transportation, or labor provision).

Bus

A bus is a type of land vehicle specifically designed to transport large numbers of passengers from one location to another, often over long distances or on city routes. Compared to private vehicles such as cars, buses are larger and longer. Buses are typically equipped with a significant number of seats and are capable of efficiently carrying a large number of passengers. Additionally, buses may offer various additional amenities, such as storage areas, toilets, air conditioning systems, and passenger entertainment. These features make buses an essential mode of transportation for meeting the needs of mass travel (Batubara et al, 2022).

Bus Rental

Bus rental refers to the practice of lending buses to individuals, groups, organizations, or companies to meet specific needs, such as for tourism, business trips, special events, school outings, or other activities requiring mass transportation. In this context, bus rental service providers, who own and operate a fleet of buses, allow those in need of transportation to rent a bus for a specified period. The party in need of a bus may request a rental by drafting a contract that outlines various details, such as the rental duration (days, weeks, or even months), the desired travel route, the rental fee, usage conditions, and the renter's responsibilities regarding bus maintenance and its return in good condition. Rental rates may vary depending on several factors, including the type of bus, the number of passengers, the rental duration, and the amenities provided on the bus. The agreement may also include specific requirements related to safety, safety equipment, and facilities necessary for the trip. Once the contract is agreed upon, the bus is provided according to the established terms, and the renter is responsible for adhering to the contract and ensuring the bus is returned in good condition (Rachmat et al, 2019).

Android

Android is an open-source operating system based on the Linux kernel, specifically designed for mobile devices with touchscreen interfaces, such as smartphones and tablets. Initially developed by a company called Android, Inc., Google financially backed and eventually acquired the company in 2005. Android was officially released in 2007, coinciding with the establishment of the Open Handset Alliance. This consortium consisted of 34 companies from the hardware, software, and telecommunications industries. Android was commercially introduced in October

2008, marking the beginning of a new era in mobile technology and defining the landscape of mobile computing (Surahman and Setiawan, 2017). According to its official website, one of Android's main advantages is its open-source nature, allowing developers to access the source code and create applications accessible to users across different device brands. The open-source aspect also enables flexibility and adaptability, making the operating system compatible with various types of mobile devices and user needs. Today, Android is one of the most popular mobile operating systems in the world, with a significant market share. Smartphones from various major brands, including Samsung, Huawei, and Xiaomi, use the Android operating system.

React Native

React Native is an open-source framework developed by Facebook, designed to facilitate cross-platform mobile application development using JavaScript as its primary programming language. React Native allows developers to create mobile applications with native-like interfaces and performance, capable of running on both iOS and Android platforms (Santoso et al, 2022). One of React Native's key advantages is its ability to use a single JavaScript-based codebase to develop applications that work across multiple platforms, saving time and effort during the development process. React Native leverages pre-existing components known as "React components," enabling easier reuse and integration into applications. The framework's working concept involves converting React components into native elements compatible with the target platform (iOS or Android). This approach provides developers with an experience akin to native app development, even though they are using a more common programming language, JavaScript.

METHODS

Research Design

In developing and designing an application, a specific process model is required to complete the task. In this research, the method used is prototyping, as it is supported by several factors. Prototyping allows researchers to quickly receive feedback from customers, which will help guide the application development process (Figure 1).
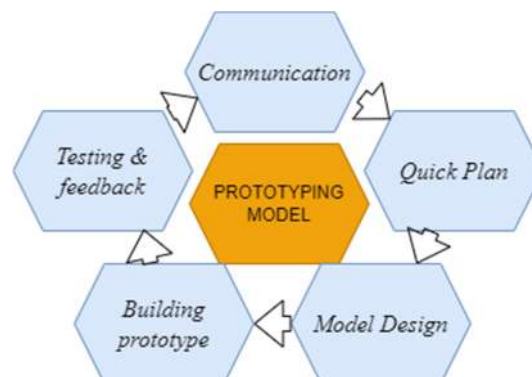

Figure 1. Prototyping Process

1. Communication: The process of gathering data related to the application by communicating with customers.

2. Quick Plan: Developing a plan based on the data obtained during the communication process with the customer.
3. Model Design: After data collection and planning, the application design is created, focusing only on the core aspects of the application so that the customer can see how the application functions.
4. Building Prototype: Creating a prototype based on the requirements gathered.
5. Testing & Feedback: Testing the application to determine if it meets the client's requirements. If not, the customer provides feedback to guide further development of the application.

Conceptual Framework of the Application

  The conceptual framework diagram of the application illustrates the relationships and interactions between key components and users of the bus rental application.
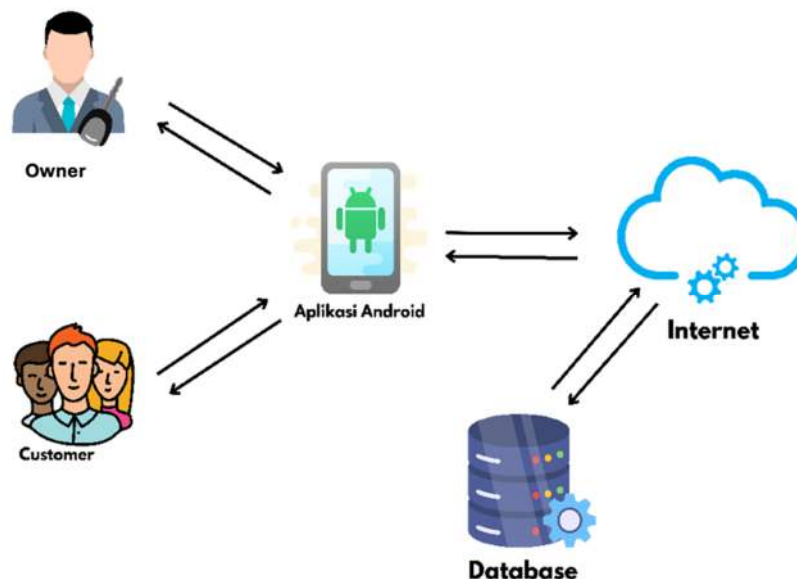
Figure 2. The conceptual framework diagram

  Based on Figure 2, it can be observed that the application developed includes two different types of users: Vehicle Owners and Customers. These two types of users can be distinguished by the accounts they use to log in. The features available will also differ according to the type of user. Additionally, the Android application operates with an internet connection, enabling it to connect to a database that stores all the data of all user types, allowing them to interact with one another through the application. The activities that occur within the application include the following:

Vehicle Owner
1. The Vehicle Owner downloads the application from the Play Store, registers for an account, and logs in.
2. After successfully logging in, the Vehicle Owner can immediately register the bus they wish to rent out.

3. Once the registration is complete, the Vehicle Owner can wait for a Customer to make a booking for the registered bus.
4. The Vehicle Owner will then receive a rental request message from the Customer, which will also include the Customer's details.
5. The Vehicle Owner decides whether to confirm or reject the Customer's request.
6. After confirming the rental, the Vehicle Owner can contact the Customer to provide information about the vehicle pickup point.

Customer:
1. The Customer downloads the application from the Play Store, registers for an account, and logs in.
2. After logging in, the Customer can browse and select a suitable bus for rental.
3. Once the Customer selects a vehicle, they choose the rental duration.
4. After the Customer successfully selects a vehicle and rental duration, the data will be sent to the Rental provider.
5. If the Customer's request is rejected by the Rental provider, the system will display a notification stating, "The selected vehicle is currently unavailable."
6. If the request is confirmed, the Customer will be provided with the terms and conditions for renting the vehicle. These terms include an agreement that if the vehicle is damaged, the Customer will be charged based on the extent of the damage. If the Customer agrees to these terms, the system will generate a digital receipt as proof of the vehicle booking and agreement to the terms and conditions.
7. The Customer can then contact the Vehicle Owner to receive information regarding the vehicle pickup point.
8. The Customer can use the rented vehicle and is required to return it at the agreed-upon time.

RESULTS AND DISCUSSION

Application Design

The interaction between users and the application is illustrated through a use case diagram, which provides a clear representation of how each use case functions within the system. This diagram outlines the various actions that different user types, such as Vehicle Owners and Customers, can perform, from account registration and login to bus rental and management processes. By mapping out these use cases, the diagram helps to visualize the user journey and the corresponding system responses, ensuring that the application's functionality aligns with the needs of both user groups. This approach simplifies understanding of the application's workflow, highlighting how users engage with different features and the steps involved in each interaction.
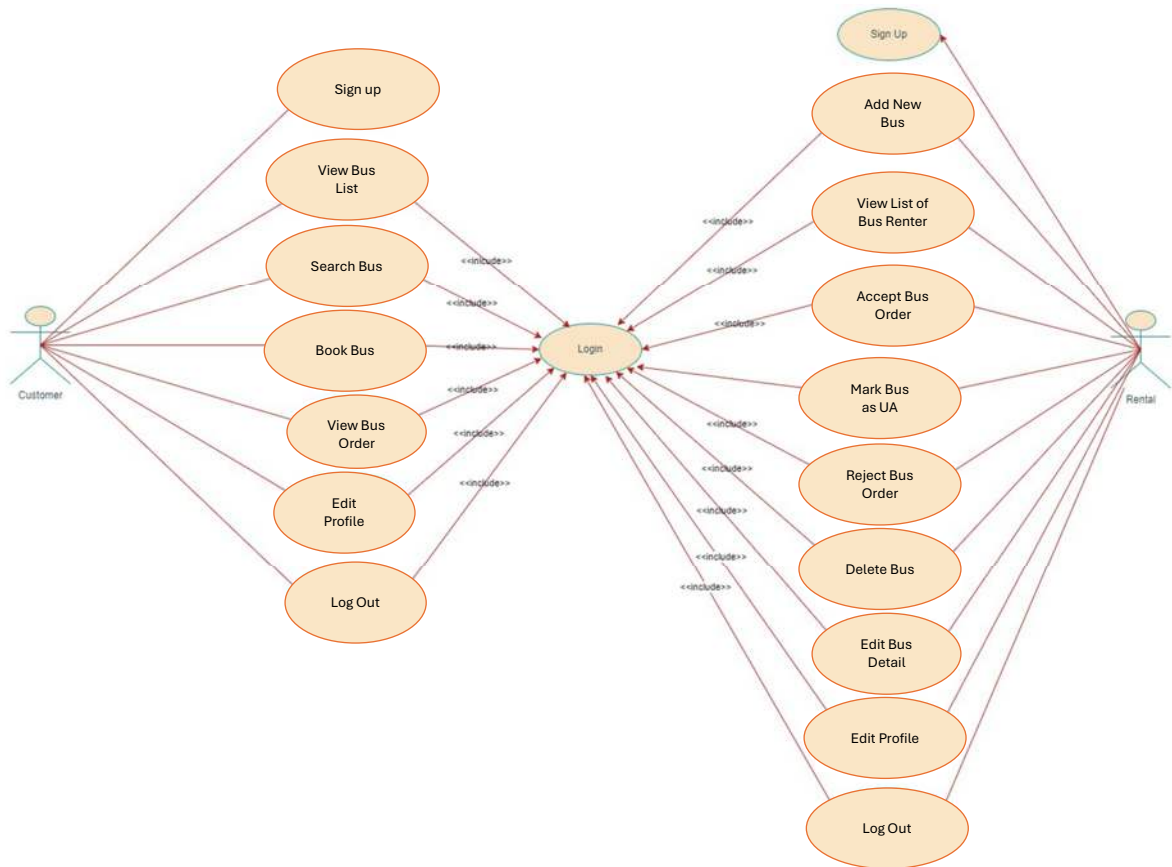
Figure 3: Use Case Diagram of the Bus Rental Application

Figure 3 shows the use case diagram of the Bus Rental Application. When a user wants to use the application, the first step is to create a new account if they don't already have one. Then, they will be directed to the login page. After successfully logging in, the application directs the user to the main menu, which contains features for bus rental services.

Application Implementation Results
The following images demonstrate the implementation of the application interface and several features within the app.

Figure 4: Login Page

Figure 4 displays the initial screen of the application when first opened. On this initial screen, there are two buttons: a login button and a sign-up button. The login button is used by owners or customers who have already registered in the app, while the sign-up button is for owners or customers who have not yet registered.
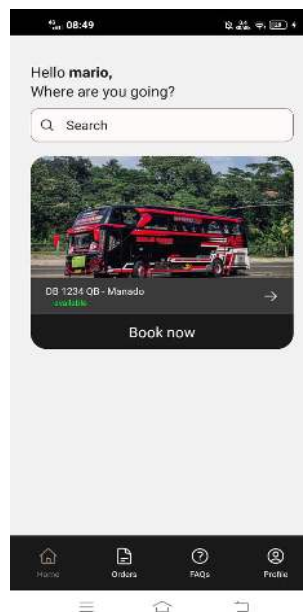

Figure 5. Application Home Page

Figure 5. shows the home page from the Customer's perspective. There are several buttons, including the search button and add bus button. The blue box contains a feature that disables bus booking when the bus is already booked. There is also an edit button. In Figure 5.5, the edit button view is shown, where users can modify the bus data or other related information.

Figure 6. Booking Page

Figure 6 illustrates the booking process for a bus. There is a form that the customer must fill out, including pickup location, destination, the date of bus usage, and pickup time. The final field is for uploading proof of payment via bank transfer. Once the form is completed, the customer can proceed with booking the bus by pressing the "order" button at the bottom.

Figure 7: Order Completion Page

Figure 7 displays the screen that appears after a customer has completed the bus booking. From the rental side, the rental provider will press the "Done" button once the order is finalized.

CONCLUSION AND SUGGESTION

Conclusion

Based on the research results and discussion conducted regarding the application, we conclude that the Shikai application will be a useful tool for bus rentals in North Sulawesi. We are confident that, by focusing on market needs and improving user experience, this application has great potential to become an effective solution in meeting the demand for bus transportation services in the North Sulawesi region.

Suggestions

The researchers have several suggestions for future development of the Shikai application, including the integration of third-party payment API features and rental fee calculation using map-based location points. These features would streamline the payment process directly within the application. Additionally, improvements to other features that are currently lacking should also be considered for future updates.

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