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STREAMLINING LAUNDRY SERVICES : ENHANCING CUSTOMER EXPERIENCE WITH THE "HASSLE-FREE PICKUP" FEATURE IN REINE LAUNDRY'S MOBILE APP

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ABSTRACT

In the digital era, service businesses like Reine Laundry face challenges in efficiency and management that impact customer satisfaction. Hence, we design a mobile application with the standout feature of "Hassle-Free Pickup" to facilitate the ordering and management process at Reine Laundry. This feature enables customers to easily schedule clothing pickups, minimizing manual steps in entering clothing data, improving operational efficiency, and delivering high customer satisfaction. With this approach, Reine Laundry is ready to compete in the competitive digital-era laundry industry. This application uses React Native and Go(Golang) for its front-end and back-end, respectively. Further, it applies MySQL for the database. This enhances responsiveness on mobile devices and boosts application performance. The application allows customers to obtain service price information, place orders, and make payments after using the service. This represents an innovative step in optimizing operations and enhancing customer experiences in the evolving laundry service industry. From the results of the conducted testing, all five respondents agreed that the implementation of the 'Hassle-Free Pickup' feature in the Reine Laundry mobile application significantly improves operational efficiency and provides a smoother customer experience. Additionally, the implementation is considered to continuously strengthen the business's position in facing similar competitors.

Keywords*: mobile application, Reine Laundry, hassle-free pickup.*

1. Introduction

In the rapidly evolving digital era, information technology and communication play a crucial role in supporting efficiency and enhancing customer experiences in various business aspects. One sector undergoing transformation is the service industry, including laundry services, often operated as small and medium-sized enterprises (SMEs). The laundry business has become a favorite choice due to the high demand for these services, especially in major cities. Reine Laundry, an SME established in 2023 in West Jakarta, recognizes the importance of meeting customer expectations and staying competitive. However, Reine Laundry faces challenges such as inaccurate order tracking, inefficient scheduling, and outdated payment methods. Limited interaction with customers also affects customer satisfaction. In the process of designing and developing the application, Reine Laundry will adopt an approach with the Agile SDLC model, which has advantages such as: Changes can be handled quickly. The software development process requires a relatively shorter time and does not require significant resources. Clients can provide feedback to developers during the programming process. With this step, Reine Laundry aims not only to meet the demands of the digital age but also to present a solution that is adaptive and responsive to changing customer needs.

2. Related works

Yunita et al. [1] develop an efficient laundry information system application for Saidi Laundry. The purpose of this application is to address issues such as lost receipts, delayed payments, and manual processes. Additionally, it allows online transactions to enhance customer convenience and security. The application's design utilizes the prototype method and a UML approach. This application improves operational efficiency at Saidi Laundry and provides a better customer experience, especially during the pandemic. The key difference from our research is that this application development encompasses the cashier, customers, and owner, whereas we only cover the admin and customers. The methodology employed in their research is the prototype model, while we apply the SDLC Agile model.

Sari and Setiawan [2] explore the development of the Android-based D'Laundry application using the Design Thinking Model approach. This approach centers on user needs and emphasizes an iterative and collaborative design process. The D'Laundry app aims to streamline laundry service ordering for customers via the Android platform, offering features like order tracking, online payments, and customer notifications. The research results in the D'Laundry app, enhancing user experiences in accessing laundry services with ease and efficiency. Notably, this study diverges from our research by employing the design thinking model approach and focusing on customer convenience for service ordering through Android, while a website-based model caters to admin users, in contrast to our mobile-based approach for both customer and admin users.

Rizqi et al. [3] have developed an Android-based laundry pickup and delivery application using the Google Maps API. The objective is to facilitate customers in ordering laundry services. This application utilizes Google Maps for efficient route planning and provides guidance to drivers. The study encompasses requirement analysis, database design, user interface design, feature implementation, and testing. The result is a user-friendly mobile app for laundry booking and accurate driver navigation. This research differs from our work by focusing on the use of the Google Maps API for pickup and delivery laundry services and involving three types of users (customers, laundry services, and couriers) with a Waterfall SDLC model, while our research employs a more flexible Agile model and does not use the Google Maps API for laundry booking.

3. Research Method

The Reine Laundry mobile application will follow Agile model in the SDLC (Software Development Life Cycle). Agile emphasizes responsiveness to changes, customer feedback, and stakeholder satisfaction. The Agile development cycle will serve as a guide in the design of this application. The following is the cycle of the Agile model that will guide the process of designing the mobile-based booking and management service application at Reine Laundry [4]. **Figure 1**. depicts the Agile development cycle.

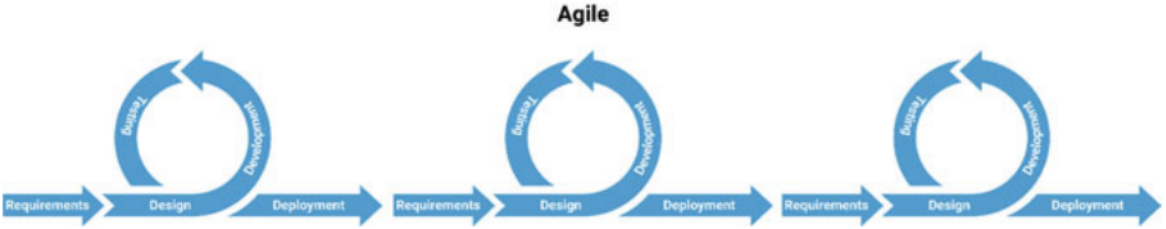

Figure 1. Design cycle in Agile mode [4]

Parsons and McCallum [4] explained that the Agile model consists of 5 (five) stages, i.e.,

1. **Requirements Analysis**
   In this stage, a series of meetings is conducted with managers, stakeholders, and users to identify business needs. The team gathers concrete, relevant, and detailed information, such as who will use the product and how the product will be used. During this stage, ideas that can be realized are broken down into small tasks, prioritized, and assigned to different iterations. In this phase, the author conducts meetings and discussions with the owner of Reine Laundry's to discuss the analysis of needs that will be applied in the design process.
2. **Design**
   After dividing the work into different iterations, the team collaborates to find solutions that meet the existing needs. This process involves discussions, creative thinking, and collaboration to achieve the desired outcomes. During this stage, the author initiates the modeling process by creating use cases, Activity Diagrams, Sequence Diagrams, and Class Diagrams. This extends to the development of the user interface using Figma prototypes.
3. **Development**
   In this stage, each designed feature is implemented. This means that all ideas, designs, and system application analyses are translated into a specific programming language. The development team will create program code that aligns with the design, turning previously conceptual functionality into a functioning reality that can be tested. During this stage, the author initiates the environment installation process to ensure smooth code execution. The application development will utilize React Native and Golang, while MySQL will be employed for the database component. This comprehensive approach encompasses the installation of the required environment for the coding process to function seamlessly.
4. **Testing**
   In this stage, application testing will be conducted using the black box testing method, where the testing will be directly tried by users. Black box testing is a software testing method in which the internal functionality of the system is unknown to the tester. This testing emphasizes the end results obtained by users without considering the internal logic or structure of the application.
5. **Deployment**
   After this, the product is handed over to customers for use, but this does not signify the end of the project. Delivery may be done incrementally, and new requirements may emerge over time.

4. Results and Discussion

4.1. Requirement and Analysis

Requirements analysis is the crucial initial step in the development of the Reine Laundry mobile-based booking and service management application. In this phase, we, as a developer, need to deeply understand what needs to be achieved through this application and what is required to achieve it. Based on this understanding, interviews were conducted with the owner of Reine Laundry to discuss the model and user needs in more detail for the design of the mobile application for booking and service management at Reine Laundry.

4.2. Design

In the design phase, UML (Unified Modeling Language) is used to elaborate on the detailed

system design of the application. This stage begins with the creation of a use case diagram, which serves to depict the interactions between the system and external actors that interact with the system [5]. Subsequently, use case scenarios, activity diagrams, sequence diagrams, and class diagrams are developed. Afterward, the author proceeds with designing the database, including conceptual design, logical design, and data file specifications. After the database design is completed, the design process continues with the creation of the user interface (UI) by developing a high-fidelity UI design using Figma software. **Figure 2.** illustrates the Use Case Diagram for users and the admin side.

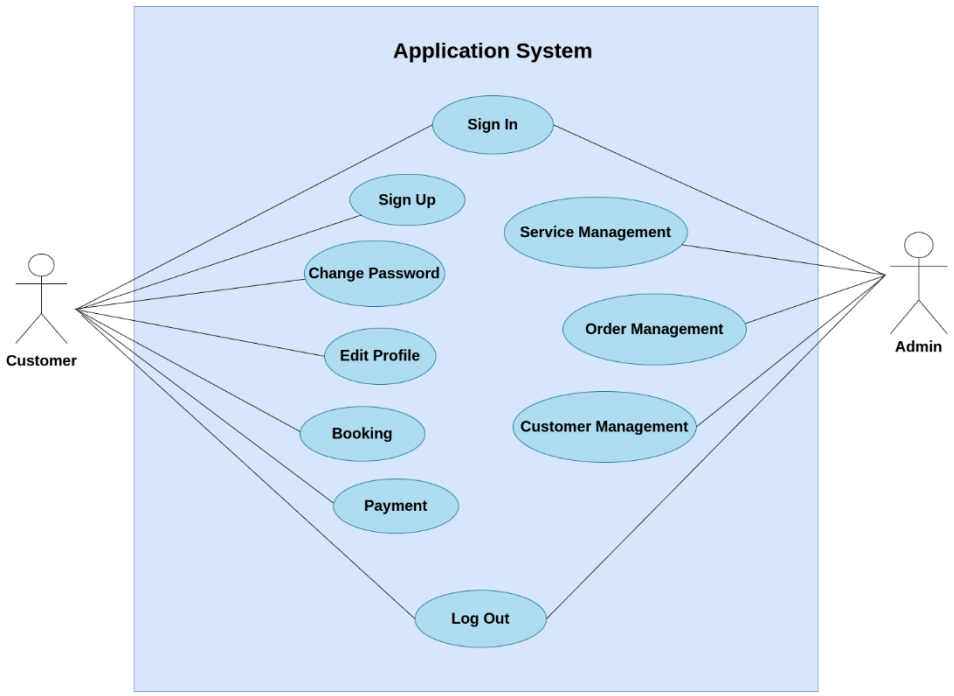

Figure 2. Use case diagram for the user and admin sides.

Different from conceptual database design, which is oriented towards an overall picture, logical database design focuses more on the details within the database structure. Conceptual database design creates a broad sketch, while logical database design takes the details from logical database design and transforms them into a concrete schema used in the data model [6]. **Figure 3.** shows the logical database design diagram.

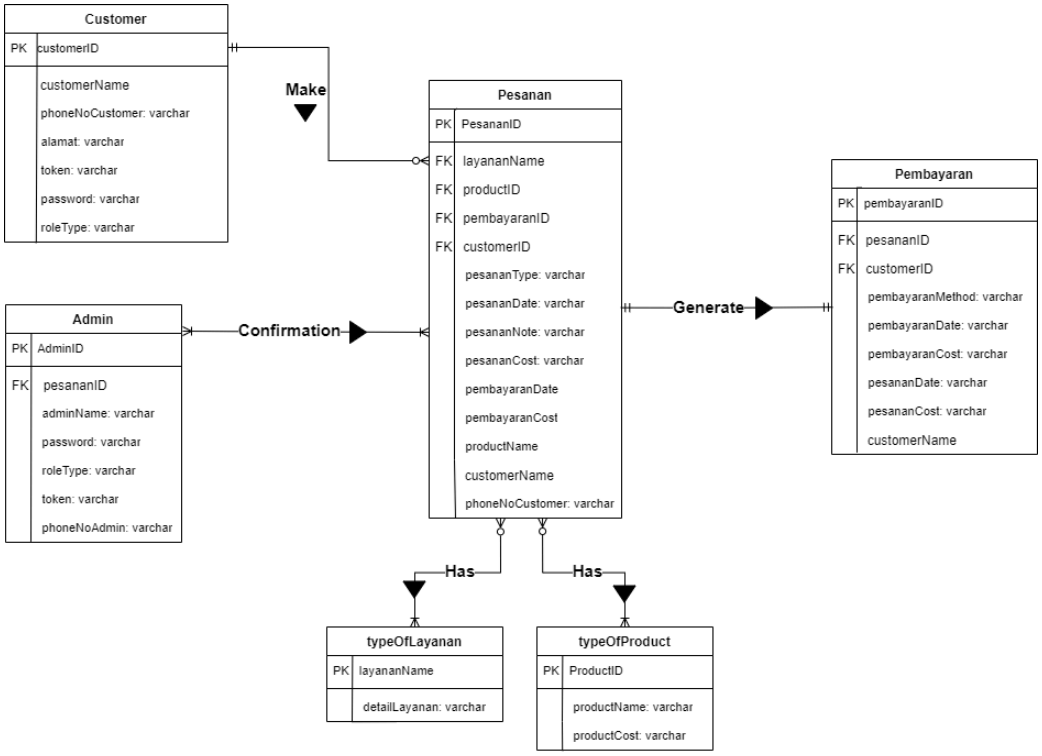

Figure 3. Logical database design.

4.3. Develompent

In this stage, developers install the necessary software, such as downloading the text editor to be used, which is Visual Studio, and installing Node.js and NPM (Node Package Manager) as the runtime environment for running JavaScript code. Furthermore, installing the React Native Command Line Interface (CLI) and Android Studio to initiate the development of an Androidbased application. In the initial phase, the user interface (UI) is designed by creating screen frames, buttons, and various other components that would be displayed. After completing the UI design, the development continues on the back-end side. Here, it is ensured that data can connect with the user interface. To establish this data connection, endpoints following HTTP methods are implemented for communication between the application and the server.

The programming language used for the back-end was Golang, and for data storage, MySQL was employed. The HTTP methods used included GET (for retrieving data), POST (for sending new data), PUT (for updating or replacing existing data), and DELETE (for removing data from the server). This stage is a crucial step in comprehensive application development [7]. **Figure 4.** shows the display of the designed homepage in the Reine Laundry mobile application. The homepage displays two types of service packages available in Reine Laundry.

Figure 4. Customer homepage display

Figure 5. ”Pisah Sendiri” page

Figure 6. Hassle-Free Pickup Page

Figure 7. Payment Page

Customers can choose one of the two available service packages. **Figure 5.** represents the layout for customers choosing the ’Separate Yourself’ package, where customers need to input clothing details. Meanwhile, **Figure 6.** shows the design layout when customers select the ’Hassle-Free

Pickup' feature, which streamlines the customer's actions when ordering the laundry process. After customers make a reservation, they proceed to the next step, which involves payment. **Figure 7.** displays the payment page. The design of the dashboard interface in the admin account is shown in **Figure 8.** In the admin dashboard, users can select from three services: Service Management, Order Management, and Customer Management.

Figure 8. Dashboard Admin Page.

Figure 9. Service Management Page.

Figure 10. Order Management Page.

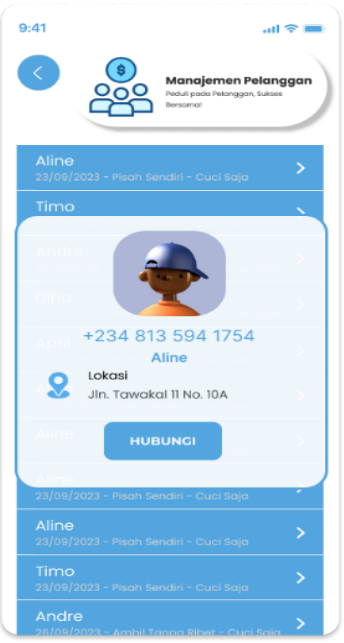

Figure 11. Customer Management Page.

Figure 9. is the design of the Service Management page, which functions to display the services

that will be presented to users. Admin can add, edit, and delete service data. Unlike the service management feature, **Figure 10.** is the order management page that allows the admin to receive and view order data from incoming customers. **Figure 11.** is a customer management design where the admin can view detailed data of registered customers.

4.4. Testing

In the mobile application design for ordering and service management at Reine Laundry, the author will use the black box testing method. The author, as a developer, will initiate testing twice, both from the customer and admin development sides. On the customer side, testing will be conducted by performing several necessary tests such as the sign-in process, sign-up, password recovery, ordering, payment, profile editing, and log-out in the designed program. After that, on the admin side, testing will involve steps ranging from the sign-in process, adding services, editing services, deleting services, getting order data, accepting orders, canceling orders, viewing customer data, and logging out of the admin account [8]. **Table 1.** is the result of testing carried out on the customer side application. The results of testing carried out on the admin side of the application can be seen in **Table 2.**

Table 1. Customer side functional testing

NO	Acceptance Requirements	Succeed	Fail
1	The Application System can display the Registration and Login menu	Y	-
2	Customers can register an account or log in to an account	Y	-
3	The application system can display the ’forgot password’ menu	Y	-
3	Customers can use the ’forgot password’ feature	Y	-
4	The application system can display a homepage menu	Y	-
5	Customers can access the ’hassle-free pickup’ page from the homepage	Y	-
6	The application system can display the order data input field on the ’pick it up without hassle’ page	Y	-
7	The application system can display order input on the ’Pisah sendiri’ page	Y	-
8	Customers can access the ’Pisah sendiri’ page from the homepage	Y	-
9	the application system can display the types of payment models available	Y	-
10	Customers can choose the types of payment method	Y	-
11	Customers can redirect the admin’s WhatsApp link	Y	-
12	Customers can carry out the ordering process	Y	-
13	Customers can process payments	Y	-
14	Customers can cancel orders	Y	-
15	The application system can display customer order data	Y	-
16	The application system can display customer account data on the profile page	Y	-
17	Customers can change profile data	Y	-
18	The application system can display customer order history	Y	-
19	Customers can view order history data	Y	-

20	The application system can display data on the laundry profile page	Y	-
21	Customers can access the laundry profile data page	Y	-
22	the application system can display a logout menu	Y	-
23	customers can log out	Y	-

Table 2. Admin side functional testing

NO	Acceptance Requirements	Succeed	Fail
1	The application system can display the admin login menu	Y	-
2	admin can log in	Y	-
3	The application system can display the dashboard admin page	Y	-
4	Admin can access the service management menu	Y	-
5	The application system can display product data and add, edit and delete product features in the service management menu	Y	-
6	admin can add, edit and delete products	Y	-
7	the application system can display an order management page	Y	-
8	the application system can display order data, then accept the order or cancel the order	Y	-
9	admin can view order data, accept orders and cancel orders	Y	-
10	the application system can display order product input for order type ’take without hassle’	Y	-
11	admin can input order product data for order type ’take without hassle’	Y	-
12	The application system can display customer account data and customer detail data	Y	-
13	Admin can view customer data on the customer management page	Y	-
14	The admin can redirect the user’s WhatsApp link from the registered telephone number	Y	-
15	The application system can display the admin profile page	Y	-
16	Admin can change profile data on the admin page	Y	-
17	The application system can display the admin logout page	Y	-
18	Admin can carry out the logout process	Y	-

4.5. Deployment

In this stage, the installation process will be carried out, and the application will begin to be run and used by users, including customers and admins. During this stage, analysis and periodic testing will continue to be conducted if any system or feature requires reevaluation.

5. Conclusion

This research aims to enhance the customer experience at Reine's Laundry through the "Hassle-Free Pickup" feature in the mobile app. The results indicate that this feature successfully improves operational efficiency and customer satisfaction. Utilizing React Native, Go (Golang), and MySQL, the application offers enhanced responsiveness on mobile devices and enables customers to easily book and pay for laundry services. In the context of the increasingly digital laundry industry, this approach allows Reine's Laundry to compete effectively and provide a superior customer experience.

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