



UI/UX Design of Laundry Pick-Up and Delivery Application using Prototyping Method

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Abstract

Digital transformation demands operational efficiency in the conventional laundry industry, which is still hampered by manual management and limited geographic reach. In response to this phenomenon, this research focuses on developing a UI/UX design for the Laundry Express mobile application with superior pickup & delivery service features. The main goal is to reduce the potential for data input errors while providing information transparency for users. Through an iterative prototyping method, the design process includes needs identification and continuous evaluation using Figma. The final product, a high-fidelity prototype, integrates order tracking features, automatic cost calculation based on weight, and a service assessment module. Evaluation using Likert scale for usability measurement demonstrated a high level of ease of navigation, allowing users to complete transactions without technical obstacles. This study concludes that the iterative prototyping approach is effective in producing intuitive application designs that meet the needs of modern society who require flexible laundry services.

Keywords: Laundry Application, Figma, Prototyping, UI/UX Design, User Experience

1. Introduction

In today's increasingly advanced modern era, many media outlets utilize technology to facilitate people's daily activities. Furthermore, various aspects of life also benefit from information technology, particularly in business development. Currently, the utilization and development of information technology, such as the internet, is crucial for business activities. One of the advantages of using the internet is not only for business but also for communication between companies and customers, providing a wider market without being limited by distance [1]. Technology is currently undergoing significant development, with the internet and websites being the most prominent examples. The emergence of websites with high-quality user interface (UI) and user experience (UX) designs is crucial. A well-designed website can increase user satisfaction and help businesses achieve their goals. A well-designed website can also increase user loyalty. The use of UI/UX on a website provides information about what is being explained and what is actually needed [2]. A user interface is a computer software component that manages the user interface, encompassing the visual aspects of an interactive product, such as buttons, menus, navigation, icons, text, colors, and layout. User experience is the experience a user has when interacting with a product, service, or system. UX also encompasses the ease or satisfaction a user experiences when using a digital interface or service [3]. Many businesses have undergone digital transformation by adopting applications to grow their business. One business that still relies heavily on manual methods is laundry services, which still provide manual pickup and delivery services to customers, resulting in long delays, resulting in laundry backlogs and frequent loss of clothes [4]. To address these challenges, this study proposes a prototype design for a laundry service that requires a user interface (UI) and user experience (UX) to facilitate user access and save time. This design also eliminates the need for users to wait in person and avoids frustrations caused by long waits and lost clothes. This design facilitates delivery services, eliminating the need for transporting and picking up laundry [5]. This website facilitates laundry service delivery through a design prototype and helps customers monitor the status of their laundry. The advantage of using the prototype method is the ease of understanding user needs because the designer interacts directly with users [6].

2. Theoretical Review

2.1. Design

In the context of information technology, design can be understood as the process of designing displays for interactions that connect user needs through system functions. In UI/UX design, design encompasses not only aesthetic aspects such as color and layout, but also aspects of function and user convenience, including how the system facilitates user activities. The fundamental principle of user interface (UI) design focuses on visual presentation so that users can easily interact with the system. Meanwhile, user experience (UX) emphasizes the overall user experience when using the system, including efficiency, satisfaction, and ease of use[7].

2.2. User Interface and User Experience

According to Lastiansah (2012), a user interface is the way a program and a user interact. The term "user interface" is sometimes used interchangeably with "human-computer interaction," which encompasses all aspects of user-computer interaction. Everything seen on the screen, read in documentation, and manipulated with the keyboard or mouse is also part of the user interface. The concept of a user interface has many aspects to consider, as it refers to various technological applications such as electronic displays, web applications, mobile applications, and others.

According to the ISO 9241-210 definition, user experience is a person's perception and response to using a product, system, or service. User Experience (UX) assesses a person's satisfaction and comfort with a product, system, or service. The principle in building UX is that the audience has the power to determine their own level of satisfaction (customer control). No matter how good the features of a product, system, or service, if the intended audience cannot experience satisfaction, comfort, and ease in interacting with it, the UX will be low[8].

2.3. Laundry

A laundry service is a business that provides laundry services. The service offered is a laundry service by the kilo, which includes dry cleaning, folding, and ironing. Laundry fees are determined by the weight (in kilograms) or the number of garments. A laundry service is a business that provides laundry services using automatic machines and dryers, along with special cleaning and fragrance solutions[9].

2.4. Prototyping

Prototyping is a method used in creating UI/UX websites and can provide developers and users with a complete visual representation of how the system will work. Prototypes are also an important part of UI creation in this study, serving as a hands-on software engineering approach that illustrates the website that will be developed in the future[10].

3. Research Methods

This research method will discuss UI/UX design using the prototyping method. This method begins with a UI approach to gather data and problem assumptions from potential users. The next step is the design process, which utilizes prototyping methods to create interactive application designs.

3.1. Research Procedures

In the research procedure phase, a prototype method will be implemented repeatedly, focusing on the prototype method, which ensures that UI/UX design is carried out systematically and can be evaluated directly by users. This phase involves several steps, including:

- a. Needs Analysis
At this stage, interviews and literature studies are conducted with users to gather data and information on the problems they experience. This information will be used as the primary focus of the design.
- b. Design Planning
After completing the analysis stage, the next step in this stage is the design development, starting with the user flow. After that, a wireframe sketch is created, followed by adjustments by applying colors to create an aesthetic appeal and applying UI/UX principles.
- c. Prototype Building
At this stage, the design is implemented through a prototype using Figma tools, which make the design interactive and allow for interaction simulations. This prototype is then tested to determine whether the implemented prototype provides a positive response from potential users.
- d. Usability Testing
At this stage, a usability test analysis is conducted on the design. The analysis results will identify usability issues. If the evaluation results indicate that the design does not meet standard user needs, improvements will be made to the design and prototype.

3.2. Methods of Collecting Data

The data collection methods in this study are:

- a. **Observation**
In this phase, a direct survey was conducted at several laundries to obtain data and information on user needs and understanding that will serve as the basis for designing the UI/UX for the laundry pick-up & delivery application. The primary objective of this process was to identify issues faced by customers and laundries during the service process and to understand the laundry service flow, from ordering, pick-up, washing, and delivery to customers.
- b. **Interviews**
Interviews were conducted to gather information about the issues potential users are experiencing with laundry pick-up and delivery. The interviews were conducted with potential users, asking several questions. The results were summarized and analyzed to identify the problem areas to achieve the desired results.
- c. **Questions**
This method involves distributing questionnaires for information surveys to gather data from potential users to identify their needs and the problems they face. This questionnaire can also be used to identify problems, habits, and features users require when using laundry services.
- d. **Literature Review**
The literature review method at this stage is used to obtain previous theories that strengthen this theoretical research through previous research. By identifying this previous research, standards can be established in creating a relevant design framework. Previous research is obtained from sources such as scientific journal publications, theses, and industry standard publications. The results of the literature review can be used as the main reference in creating and analyzing the Laundry Pick-up & Delivery prototype.

3.3. Success Criteria and Study Limitations

The success criteria in this design are determined based on the percentage value of feasibility obtained from the respondent questionnaire. The assessment instrument uses a 4-point Likert Scale (Strongly Agree, Agree, Disagree, Strongly Disagree) to measure various aspects of the design, including ease of navigation and efficiency of menu transitions. The level of design feasibility is calculated by comparing the accumulated actual scores from respondents with the maximum possible score, which is then presented as a percentage. A design is categorized as 'Very Eligible' if the score percentage reaches at least 70%. A score below this number indicates the need for re-iteration of the visual elements or navigation flow.

4. Result and Discussion

Below is a preview of the interface of the laundry pick-up & delivery application. Each interface is designed to make it easy for users to conduct transactions independently.

- a. **Login Page**
The first page that appears when the user tries out the design is the Login page as shown in Figure 1.

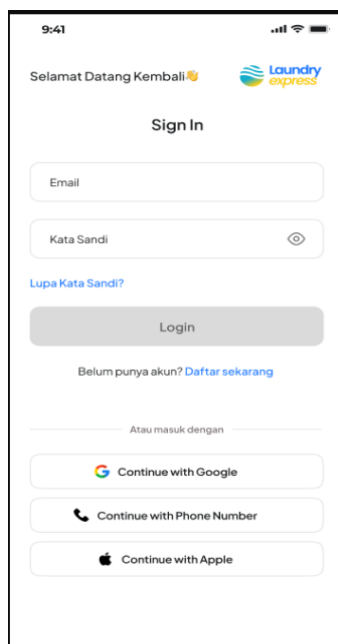


Fig. 1: Login Page

The Sign In page of this interface provides login access using an email address and password, with a password peek feature (an eye icon) for security. Users can also take advantage of quick sign-in options using their Google, Apple, or phone number accounts, and there's a help link if they forget their password.

b. Home Page

Once the user logs in, the user will be directed to the home screen to try out the design, as shown in Figure 2.

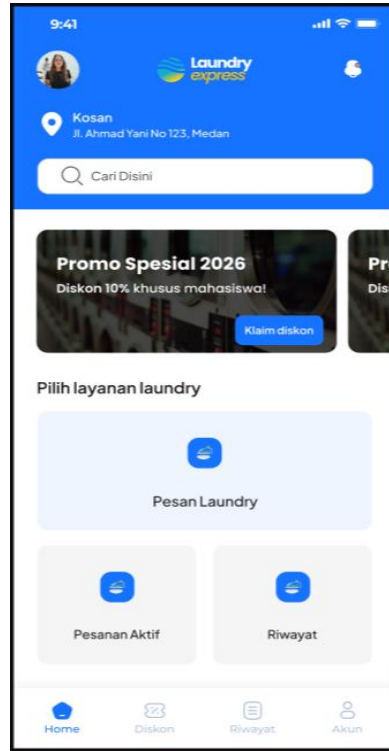


Fig. 2: Home Page

The homepage is the main display with various practical navigation options. At the top, users can immediately see pickup locations and use the search bar to find services more quickly. The main visual focus is on special offer banners and quick access menus, such as active orders and transaction history.

c. Order Category Page

When the user uses the order menu, the user will be directed to the order category page as shown in Figure 3.



Fig. 3: Order Category Page

The category display is designed to systematically guide users in determining their laundry specifications. When ordering a category, users are immediately directed to a clear category menu display, including options such as Wash by Kilogram, Wash by Unit, Shoes, and Household Items (carpets and blankets).

d. Schedule Page

After the user selects the order category, the user will be directed to the pickup schedule as shown in Figure 4.

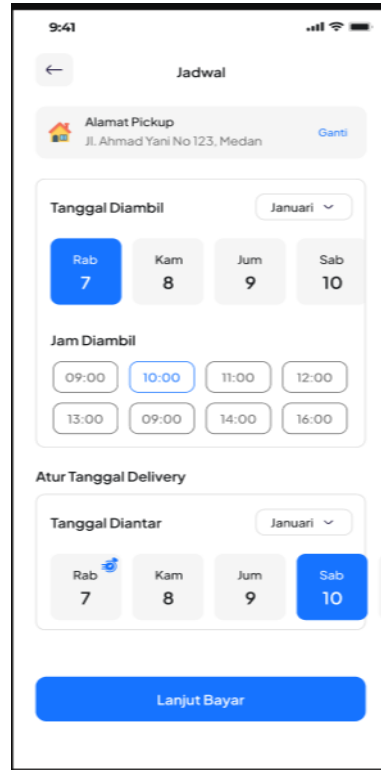


Fig. 4: Schedule Page

The pick-up schedule page also provides a flexible schedule setting feature for customers to choose the date and time for picking up and returning clothes independently.

e. Order Track Page

After the user makes an order, the user can track the order to find out the process of their order as shown in Figure 5.

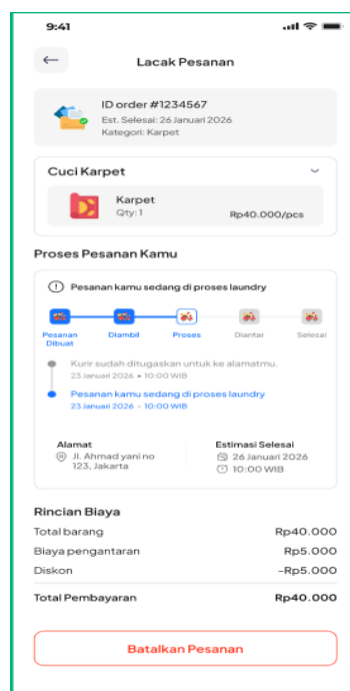


Fig. 5: Order Track Page

On the order tracking page, there is a process flow indicator that monitors each stage of the order, starting from "Order Created", "Picked", "Processed", "Delivered", to "Completed", complete with the estimated time of arrival of the courier.

5. Conclusion

Following the completion of the research, several key conclusions can be drawn.

1. The interface design simplifies data presentation through consistent aesthetics and a clean layout. The use of easily recognizable icons ensures users can instantly understand all application functions without experiencing any difficulties processing the information.
2. The user flow structure is designed to streamline the ordering process into shorter and more logical steps. This ensures that every step, from selecting the laundry type to confirming payment, is automated and seamless.
3. The integrated real-time order tracking and history management feature enhances user trust and satisfaction in monitoring the status of laundry orders through to completion.

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