UI/UX DESIGN OF A GLUTEN-FREE PRODUCT ORDERING AND CREATIVE WORKSHOP APPLICATION USING THE DESIGN THINKING METHOD (CASE STUDY: TERAS RAYU SURABAYA)

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Abstract

Rising public awareness of healthy eating has increased interest in gluten-free products. However, Teras Rayu, a gluten-free pastry and bakery business that also offers creative workshops, does not yet have a digital platform that can optimally present product information and workshop reservations. This study aims to design the UI/UX of the Teras Rayu application so that users can more easily find gluten-free products, place orders, and reserve workshops through a clear and user-friendly flow. The design process uses the Design Thinking method through the empathize, define, ideate, prototype, and test stages. The results are presented in the form of wireframes and a high-fidelity prototype that illustrate the user journey from browsing the catalog, ordering, and making payments to reserving workshops. The evaluation was conducted through usability testing using Maze, involving seven respondents and six task scenarios, achieving a success score of 82, which indicates that most users were able to understand the application flow well.

Keywords: Innovation, technology, research projects, etc.

1. INTRODUCTION

The pastry and bakery industry continues to grow alongside rising public awareness of healthy eating, one of which is reflected in the increasing trend of consuming gluten-free products. The healthy lifestyle phenomenon has driven greater interest in gluten-free consumption and is also influenced by factors such as age and income level, thereby creating wider opportunities for food businesses to provide gluten-free products (Bastiawan et al., 2022). However, developing gluten-free products in the bakery category is not always easy because gluten plays a key role in the technological characteristics of baked goods; therefore, this functionality must be adapted using substitute ingredients and/or techniques to maintain good sensory and technological quality (Pashaei et al., 2025). On the other hand, gluten-free consumers still face barriers such as limited product availability and relatively higher prices, which can ultimately affect their satisfaction with gluten-free products (Knežević et al., 2024).

In a digital platform, one of the most fundamental aspects to consider is the user interface and user experience (UI/UX). Digital service quality and user experience have been shown to be associated with customer satisfaction in the e-commerce context; thus, a clear and comfortable UI/UX design is essential to help users

understand information, navigate features, and complete transactions without confusion (Mamakou et al., 2024). In the context of food ordering applications, studies also emphasize that appearance and usability are key drivers of usage, and these factors depend on the quality of the UI/UX (Mitra & Debnath, 2024).

"Teras Rayu" is a gluten-free pastry and bakery business unit that also offers educational activities through creative workshops. Although it has a unique service concept, Teras Rayu is not yet supported by a digital platform that can adequately represent its visual value and interaction experience, making product information and workshop reservations difficult to access optimally. This issue indicates the need for a UI/UX design that can bridge user needs with the services offered. Therefore, this study focuses on designing the UI/UX of the Teras Rayu application using the Design Thinking method, as Design Thinking is recognized as a user-oriented approach to framing problems, capturing hidden needs, and "bringing the user's voice" into the design process (Lahiri et al., 2021). Design Thinking stages such as empathize, define, ideate, prototype, and testing are used to ensure that the design meets user needs (Santoso & Sumantiawan, 2025).

2. METHODOLOGY

The method used in this study is Design Thinking as the primary approach for implementing UI/UX in the Teras Rayu application. Design Thinking is a user-centered methodology that focuses on user needs, enabling the development of solutions that address problems accurately, relevantly, and with a strong user-oriented perspective. By applying the Design Thinking framework, this research aims to ensure that the resulting UI/UX design aligns with user requirements and enhances the overall user experience (Agustin et al., 2023).

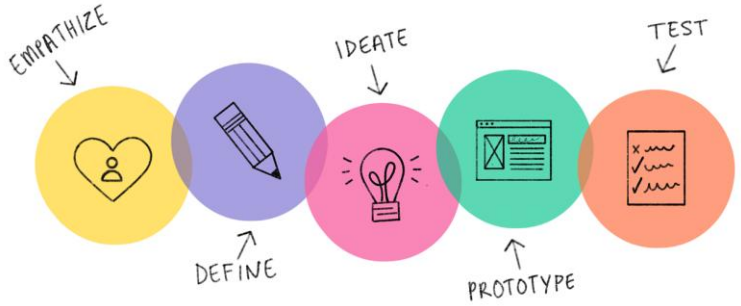


Figure 1. Design Thinking

2.1 Empathize

The empathize stage aims to understand the behaviors, needs, and challenges experienced by users of the Teras Rayu application. This stage is conducted through observation and data collection to obtain insights into how users interact with the application, particularly in the process of ordering products on Teras Rayu.

2.2 Define

In the define stage, the data and findings obtained during the empathize stage are analyzed to identify the core problems faced by users. The outcomes of this stage serve as the foundation for determining the application requirements of Teras Rayu.

2.3 Ideate

The ideation phase was conducted to generate various solution ideas to address the problems faced by users. The ideas generated were then evaluated and selected to identify the most appropriate solutions that align with user needs and effectively support the objectives of the application development.

2.4 Prototype

The ideate stage is conducted to generate a range of potential solutions to address the problems faced by users. The ideas produced are then evaluated and selected to identify the solutions that best align with user needs and effectively support the objectives of the application development.

2.5 Test

The test stage is conducted by evaluating the prototype with users to assess its usability and the suitability of the application's features. The results of the testing process are then used as evaluation material to support improvements and refinements of the application.

3. FINDINGS AND DISCUSSION

3.1 Empathize

3.1.1 Empathy Map

Figure 2. Empathy Map

	Say		Think		Feel		Do
s1	Saya suka mencari toko kue yang memiliki variasi yang unik	t1	Mempertimbangkan kualitas dan harga kue sebelum membeli	f1	Senang rasanya ketika menemukan kue yang sesuai dengan selera dan keinginan	d1	Melakukan pemesanan makanan untuk diantar atau diambil di lokasi.
s2	Saya ingin aplikasi e commerce yang proses pemesanan nya mudah	t2	Aku harap aplikasi ini punya fitur yang memudahkan	f2	Merasa frustasi jika mengalami kesulitan dalam proses navigasi aplikasi atau pembayaran.	d2	Mencari informasi detail tentang workshop, termasuk jadwal, harga, dan materi yang akan dipelajari.
s3	Gluten free cake memiliki taste yang berbeda dan sehat	t3	Berpikir apakah ada rekomendasi dari teman atau ulasan online tentang toko kue tertentu	f3	Senang saat mendapatkan pengalaman kuliner yang menyenangkan dan sesuai dengan ekspektasi.	d3	Melakukan pemesanan makanan secara online
s4	Apakah ada workshop baking menarik yang bisa diikuti melalui aplikasi?	t4	Menimbang pilihan antara mendaftar workshop secara langsung di tempat atau melalui aplikasi.	f4	Bingung jika informasi tentang workshop atau proses reservasi tidak jelas	d4	Mengikuti proses reservasi untuk workshop dan memastikan tempat tersedia.

Based on the interview results, an empathy map was developed to understand the needs and expectations of users of the pastry and bakery e-commerce application. Users prefer a wide variety of unique products, an easy ordering process, and clear information, including options for gluten-free cakes. Before making a purchase, they consider product quality, price, and recommendations. Users feel satisfied when their needs are fulfilled but experience confusion when the application navigation or workshop information is unclear.

3.1.2 Pain and Gain

The results of the pain and gain analysis indicate that users experience difficulties with navigation and a less intuitive ordering process, as well as unclear workshop information. Therefore, users expect an application that is easy to use, provides comprehensive product and workshop information, and supports special needs such as gluten-free cakes.

Table 1. Pain and Gain

Pain	Gain
Difficulty finding a bakery that offers unique cake varieties.	Easy access to bakeries with a wide range of diverse and unique products.
Frustration due to complicated application navigation or payment processes.	A smooth application experience with a fast and simple payment process.
Doubts caused by differences in taste of gluten-free cakes.	Availability of information and reviews that help users understand the taste and quality of gluten-free cakes.
Confusion due to unclear workshop information and reservation processes.	Clear workshop information with an easy-to-understand reservation process.
Hesitation in choosing cakes due to the need to consider quality and price.	Easy comparison of cake quality and prices before making a purchase.
Difficulty obtaining recommendations or reviews of trustworthy bakeries.	Availability of reliable bakery recommendations and reviews from other users.

3.2 Define

3.2.1 How Might We

The define stage indicates that users need an application that is easy to use with intuitive navigation, relevant information and reviews, convenient payment methods, and clear workshop information to support the cake purchasing and reservation processes.

Table 2. How Might We

Need	HMW
Users want to find cakes that match their preferences with quality and prices that are worth the value.	How might we help users find cakes that suit their preferences with the right balance of quality and price?
Users need an application that is easy to navigate with a simple payment process.	How might we design an e-commerce application that is easy to use and simplifies the payment process?
Users need cake recommendations and reviews that meet their expectations.	How might we provide relevant cake recommendations and reviews for users?

Users need clear and easy-to-understand workshop information.	How might we present workshop information and the reservation process in a clear and engaging way?

3.3 Ideate

The ideate stage focuses on improving the user experience through detailed search and filter features, simple navigation, fast checkout, and an easy reservation process. In addition, the application is equipped with order history, reviews and ratings, product and nutritional details, as well as workshop information and schedules.

Table 3. Ideate

Reference	Features
HMW1	Detailed Search and Filter
HMW2	Simple Navigation, Fast Checkout Process, Easy Reservation, Order History
HMW3	Reviews and Ratings, Food and Nutritional Details
HMW4	Workshop Details, Workshop Schedule

3.4 Prototype

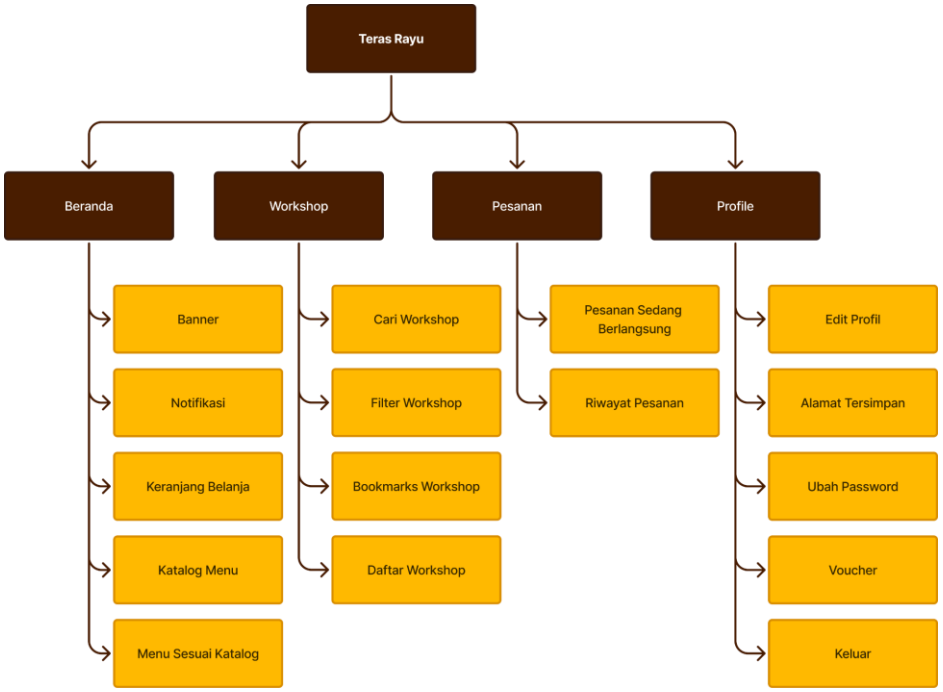
3.4.1 Design System

Figure 3. Design System

The Teras Rayu user interface design was developed based on user needs and guided by clear design guidelines. The visual identity uses yellow and brown to reflect a cheerful and premium quality impression, along with the TT Commons typeface and simple navigation to ensure information is easy to understand.

3.4.2 Information Architecture

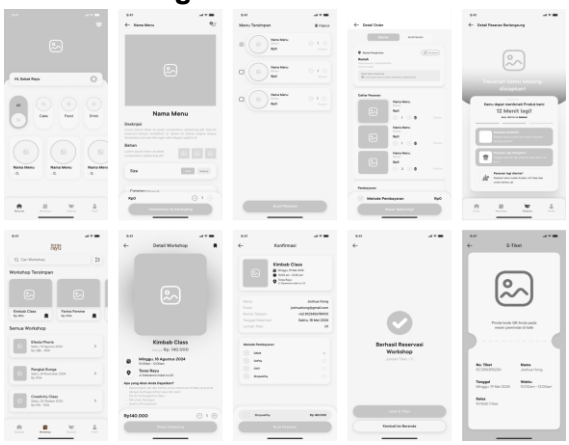
Figure 4. Information Architecture



The Information Architecture of the Teras Rayu application is designed to organize information in a structured manner, enabling users to navigate the application easily and efficiently. The main structure of the application consists of four primary menus: Home, Workshop, Orders, and Profile. The Home menu provides general information such as banners, notifications, a shopping cart, and a menu catalog. The Workshop menu functions to assist users in searching, filtering, saving, and viewing a list of workshops. The Orders menu is used to monitor ongoing orders and to view order history. Meanwhile, the Profile menu allows users to manage account data, addresses, vouchers, and account security settings. This structure is designed to ensure a clear application flow that aligns with user needs.

3.4.3 Wireframe

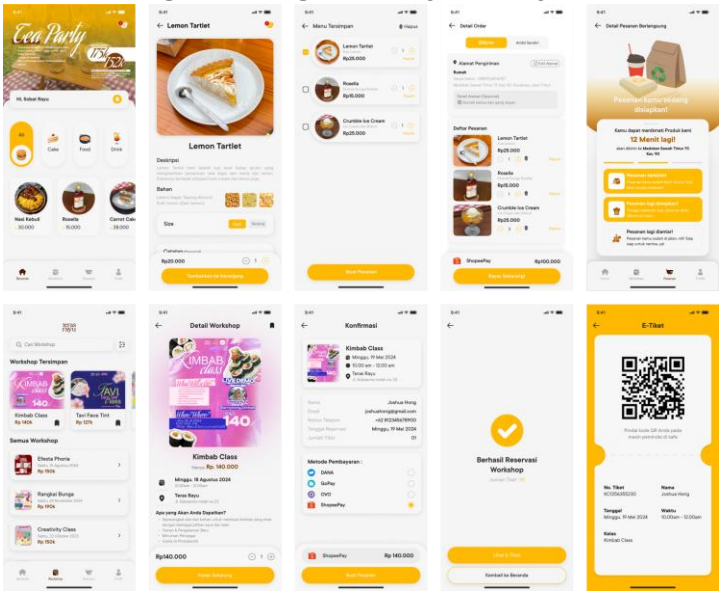
Figure 5. Wireframe



Before developing the high-fidelity prototype, the researchers first created low-fidelity wireframes as an initial representation of the interface structure and user interaction flow of the Teras Rayu application. These wireframes serve to visualize the placement of interface elements such as navigation, buttons, menu information, ordering processes, and workshop reservations without incorporating detailed visual elements such as colors and illustrations. This stage was conducted to ensure that the application's user flow aligns with user needs before proceeding to a more detailed design phase.

3.4.4 High-Fidelity Prototype

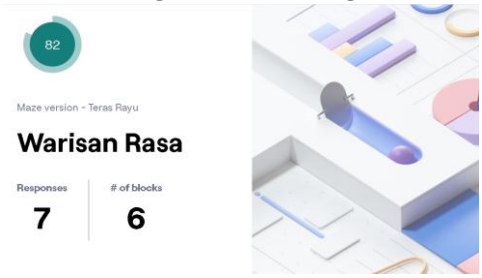
Figure 6. High-Fidelity Prototype



The high-fidelity prototype of the Teras Rayu application was designed as a representation of the final user interface, presenting complete visual details such as colors, icons, typography, illustrations, and interactive elements. This prototype illustrates the user journey, starting from browsing the menu catalog, placing orders, and completing the payment process, to monitoring order status and workshop reservations. The design of the high-fidelity prototype aims to provide a realistic depiction of the user experience prior to the implementation stage, while also facilitating the evaluation of the design in terms of both functional and visual interface aspects.

3.5 Test

Figure 7. Testing



The testing phase was conducted through usability testing to evaluate the ease of use and the effectiveness of the user interface design of the Teras Rayu application. The testing was carried out using the Maze tool, involving seven respondents and six task scenarios (blocks) that users were required to complete. The results of the testing showed a success score of 82, indicating that most users were able to understand the application flow well. This phase aims to identify usability issues experienced by users and serves as a basis for design improvements prior to the final design stage.

4. CONCLUSION

The increasing awareness of the Indonesian population regarding healthy eating habits and specific dietary needs, such as gluten-free products, indicates a growing demand for high-quality and easily accessible products. However, access to such quality products remains limited. Through the Teras Rayu application, this study aims to address this gap by providing a unique and satisfying shopping experience, as well as offering a platform for user interaction through workshops that can be booked directly via the application.

Based on the implementation of the Design Thinking method, the UI/UX design of the Teras Rayu application resulted in user-centered solutions developed through the empathize, define, ideate, prototype, and test stages. The usability testing was conducted using the Maze tool, involving seven respondents and six task scenarios. The results showed a success score of 82, indicating that most users were able to understand the application flow effectively and that the designed interface successfully met user needs.

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