

UI/UX Design for the Mobile-Based Caktrip Application in the Tourism Sector in Surabaya

Prasasti Karunia Farista Ananto¹, Devina Nur Rahmadani S.P², Aurelia Salsabiila Putri³, Melinda Citrasena Cahyaningrum⁴, Bondan Setya Adi N⁵

Universitas Pembangunan Nasional "Veteran" Jawa Timur

Email : prasasti.karunia@gmail.com, m.citrasena@gmail.com, devinanrsp17@gmail.com, aurelsalsabiila279@gmail.com
m.citrasena@gmail.com, bondansetyaadinugraha@gmail.com

The tourism sector in Surabaya has shown significant potential; however, information regarding tourist destinations remains fragmented, making it difficult for visitors to obtain accurate data related to locations, ticket prices, facilities, and parking availability. This study aims to design the UI/UX of the CakTrip mobile-based tourism application as a solution to provide integrated destination information and streamline the ticket-booking process. The Design Thinking method was employed, consisting of the Empathize, Define, Ideate, Prototype, and Testing stages. In the Empathize stage, findings revealed that users experience difficulties in accessing clear and centralized tourism information. The Define stage resulted in a problem formulation emphasizing the need for more comprehensive and structured information. During the Ideate stage, various alternative solutions and user flows were developed to support easier navigation. Subsequently, the application prototype was created using Figma to visualize core features such as destination search, location details, ticket booking, and parking slot availability. The Testing stage was conducted to evaluate usability and ensure that the proposed design aligns with user needs. The results indicate that the Design Thinking approach is effective in producing an informative and user-friendly interface that enhances the overall experience of tourists planning their activities in Surabaya.

Keywords: UI/UX, Design Thinking, Tourism Application, Surabaya, Prototyping

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Corresponding Author:

Prasasti Karunia Farista Ananto
Universitas Pembangunan Nasional "Veteran" Jawa Timur
prasasti.karunia@gmail.com

1. Introduction

Tourism is a place where we can take a break from busy activities. The tourism sector is considered capable of positive activities, one of which is economic development. Regions with tourism potential can open up opportunities for economic growth, such as hotels, lodging, homestays, restaurants, food stalls, souvenir centers, and even tourist equipment rentals [1]. One of the largest cities in Indonesia that boasts both tourist attractions and historical learning is Surabaya.

Surabaya is known as one of the largest metropolitan areas in Indonesia, boasting a variety of attractive tourism potential, including natural, historical, religious, and regional culinary delights. Surabaya has developed into the largest metropolitan city after Jakarta due to its rapid economic growth. Various large companies—such as Maspion, Unilever, and Pakuwon—continue to expand their investments in the city. Furthermore, Tanjung Perak Port plays a significant role as a hub for Indonesia's export and import activities [2].

However, despite its high appeal, the dissemination of information about tourist destinations in Surabaya remains poorly managed. As a result, residents and tourists often encounter difficulties finding accurate data regarding tourist locations, ticket prices, parking availability, and travel routes. This situation creates

inconvenience for visitors, especially since most tourist destinations still employ manual ticket purchase systems and do not yet provide real-time parking information services.

Recognizing these challenges, we aim to create an innovative information system or digital application capable of collecting and presenting all Surabaya tourism data in an integrated and interactive manner. This application is expected to facilitate users in obtaining information about tourist attractions, purchasing tickets online, and accessing details about supporting facilities. Through the implementation of a comprehensive digital system, tourism activities in Surabaya are expected to be more efficient, practical, and enjoyable for both local residents and tourists from outside the region. It also supports the development of the local sector through the use of digital technology.

2. Literature Reviews

The User Interface, or UI, is understood as an aspect related to how the visual elements of an application are arranged and presented to users. Components such as icons, buttons, typography, colors, and layout become the core focus of UI because they determine how easily users can read and navigate information. In the context of tourism applications, the role of UI is crucial to ensure that details such as tourist locations, ticket prices, and available facilities can be accessed clearly, thus enhancing user efficiency and convenience [3].

User Experience, or UX, refers to the overall experience felt by users when interacting with an application. UX not only evaluates the visual functions but also the usage flow, navigation comfort, and the extent to which the application meets user needs. In tourism applications, UX plays a significant role in helping users understand the flow of searching for destinations, purchasing tickets, and using additional features such as reviews or recommendations. A seamless experience encourages users to return to the application and rate the service more positively.

A tourism information system itself is a digital platform that provides destination information in a structured and easily accessible format. This system can function as a tourism data center that contains details such as locations, ticket prices, interactive maps, tourism facilities, and transportation access. The integration of these features greatly assists tourists in planning their trips more effectively. In addition, the presence of a tourism information system also supports destination managers in expanding promotional outreach and updating information in real-time [4].

The process of designing applications in the tourism field often utilizes the Design Thinking approach because of its user-centered characteristics. Through the stages of Empathize, Define, Ideate, Prototype, and Testing, developers can understand problems from the user's perspective and generate more relevant solutions. The implementation of this method has been proven to enhance UI/UX quality and make applications more adaptive to the needs of tourists, both in local areas and metropolitan cities [5].

Moreover, the use of mobile-based tourism applications has gained increasing attention in recent years. Various studies show that features such as destination recommendations, mapping systems, and e-ticketing services provide significant convenience for visitors in navigating tourist locations. The presence of mobile applications also contributes to streamlining tourism activities in large cities with high complexity, such as Surabaya, allowing information to be obtained quickly and accurately [6].

3. Method

The research method in this study uses the Design Thinking approach, which is a user-centered design framework that emphasizes an iterative process to understand needs in depth. This approach was chosen

because it is able to help researchers recognize problems more accurately, formulate ideas that are relevant to real conditions, and develop initial designs that can be tested directly on users. This method also combines analytical and creative thinking so as to produce solutions that can be applied practically in the development of digital applications and system-based services. In its application, Design Thinking not only pays attention to the visual aspect of the interface, but also considers how users interact with the system so that an effective, efficient, and comfortable experience is created. The Empathize, Define, Ideate, Prototype, and Test stages are carried out as one interrelated and continuous flow to produce a design that is more adaptive and responsive to the needs of users in the field.[7]

Empathize

The Empathize stage in the Design Thinking method is the initial stage in research to understand and feel the user's perspective and needs related to their needs, desires, goals, problems and challenges. This stage is usually carried out by conducting interviews with users, observing user behavior, or other methods that can obtain accurate data from users [9].

Define

Once the data is obtained at the empathy stage, the process continues to the define stage to analyze and process all the information into a more targeted problem statement. At this stage, various findings are compiled and grouped to identify the patterns of needs and the main obstacles experienced by users. The analysis helps the researcher understand the core of the problem and determine the most relevant design focus. The define stage also includes compiling a user description, including basic needs, interaction difficulties, and application usage goals. The end result of this process is the formulation of problems and more specific solution directions so that the next stage of design can run more systematically and in harmony with the real needs of users.

Ideate

The Ideate phase focuses on generating a variety of creative ideas as alternative solutions to the identified problem. In this phase, the team is encouraged to think freely and not be tied to standard patterns in order to generate as many ideas as possible. Researchers use brainstorming methods to explore various ideas and alternative solutions. The Ideate phase aims to find creative and innovative solutions to the identified problem, then determine the best option from the various ideas that emerge. In the solution selection process, user needs are the primary basis for setting priorities [8].

Prototype

The next stage is the prototype stage, used to realize the idea of the solution that has been formulated. The prototype creation stage is a very important phase in this research because it is the final result of the previous processes. At this stage, researchers use various techniques such as compiling user flows, making wireframes, and compiling mock-ups to produce an initial model. Through this prototype, testers can try and understand the ideas developed so that the process towards the implementation stage can be carried out more thoroughly before the product is released to the public. The prototype is then re-evaluated through observation and analysis to assess the extent of success or shortcomings of the media that has been created, usually made in the form of sketches, paper mockups, digital mockups, and so on [10].

Testing

The test stage is used to evaluate whether the developed prototype really meets the needs of the user. At this stage, users are asked to try out the prototype and complete tasks tailored to real-world use scenarios. The researchers then observed how users interacted, from spontaneous responses to the obstacles they

encountered, and supplemented them with feedback on ease of use and navigation comfort. These findings became the basis for refining the design to make the prototype more intuitive and easy to operate. Thus, the test stage emphasizes the iterative nature of Design Thinking because the design process is continuously improved to produce the right solution for the user. [11]

4. Results and Discussion

Empathize

The empathize stage is carried out to understand the needs and obstacles experienced by users in finding tourist information and booking tickets online. Through observations and brief interviews with migrants, boarding house students, and local tourists, it was found that users often have difficulty accessing complete and centralized tourism information. The available websites are considered inconsistent in displaying tourist details, so the process of finding information becomes time-consuming. In addition, users also experience confusion when booking tickets because the booking flow is unclear and important information such as parking quota or visitor capacity is not available in real time. The results of this empathy show that users need a travel platform that presents information in a more structured, easy-to-understand, and provides a simple and consistent ticketing process. These findings are the basis for the formulation of the problem at the Define stage and the development of solution concepts at the Ideate stage.[12]

Define

The analysis was carried out after the empathize stage was completed. It then proceeded to the Define stage, which aims to gain a deeper understanding of the users' needs and frustrations identified during the empathy process. The main issue that emerged from the empathy findings was the difficulty users experienced when trying to book tourist tickets and obtain detailed tourism information from the websites provided by the tourism operators. Therefore, the proposed solution is to develop a tourism website for the Surabaya area that is updated in real time, which is expected to be easy for users to navigate and understand, and to help both local and non-local tourists enjoy a more convenient travel experience.

Ideate

The Ideate stage was carried out to determine the most appropriate solution to the problems identified in the previous phase. At this stage, after understanding the users' needs and the challenges experienced by newcomers, boarding students, and out-of-town tourists, the author began to formulate various potential solutions to address the issue of limited access to tourism information in Surabaya. This ideation process resulted in the development of a user flow that illustrates the sequence of interactions users experience when navigating the CakTrip website.

The user flow concept is used to systematically outline every step taken by users, starting from the moment they access the website to completing activities such as viewing tourism information, checking parking availability, or booking tickets online. Developing this user flow helps ensure that each designed feature aligns with the users' primary needs—centralized, clear, and accessible information.

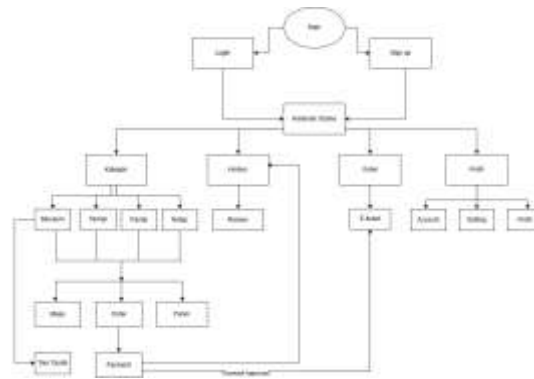


Figure 1. CakTrip Application Flowchart Diagram

The main user flow consists of several processes, including initial website access, sign-in/sign-out, searching for tourism information, viewing tourism details, booking tickets online, and checking parking quotas. At this stage, several initial ideas were also evaluated using a UX design approach to ensure that the selected flow offered the simplest yet most informative experience. The design process was carried out using Figma, allowing the user flow sketches to be visualized in a structured manner.

Prototype

The Prototype stage aims to implement the ideas obtained from the previous phase and translate user requirements into a mobile application prototype. By designing this prototype, the author can evaluate the ideas and design created for the target users.

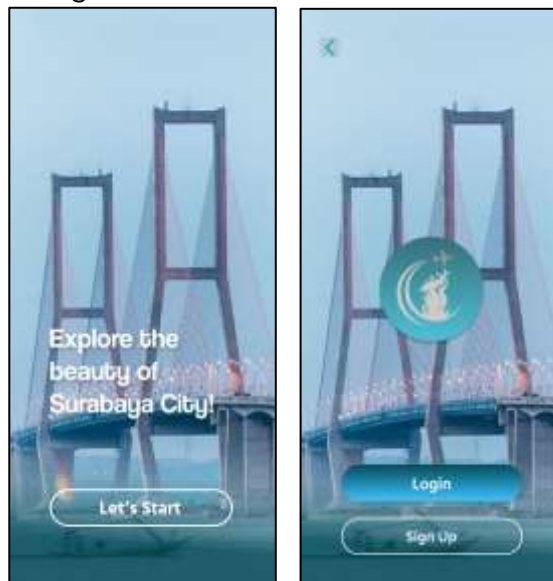


Figure 2. Initial Display When Opening the Application

Figure 2 presents the application interface accessed by the user or visitor, where they can click the “Let’s Start” button. Then, the visitor will be directed to choose between Login or Sign Up.

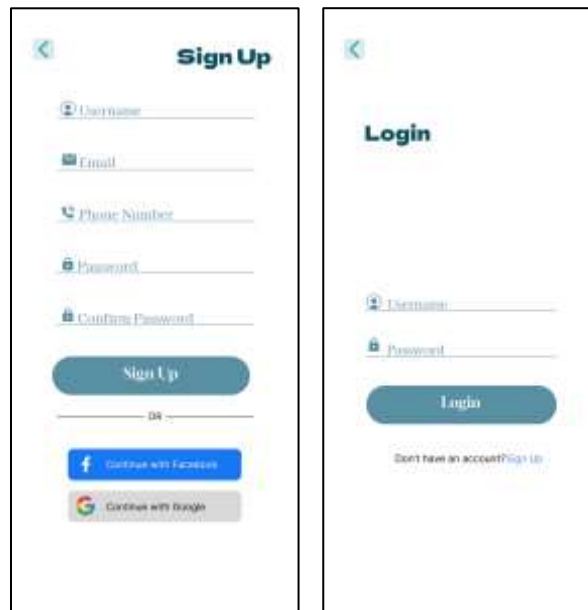


Figure 3. Login and Sign Up

Figure 3 shows the interface where users or visitors can perform the login action to access the application. If they do not have an account yet, they can click “Sign Up” located below.

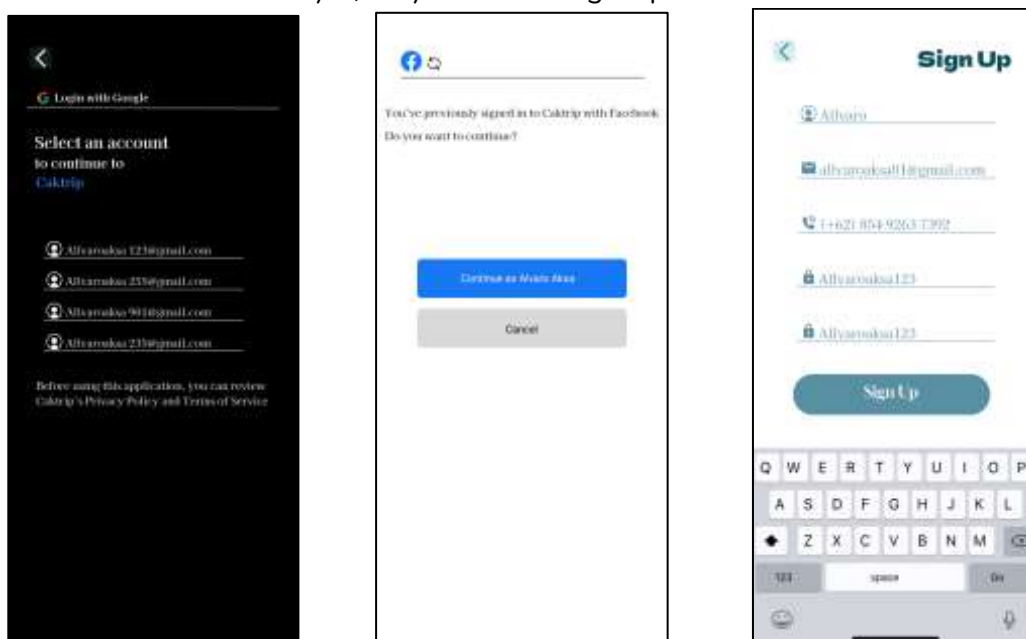


Figure 4. Login and Sign Up Options

Figure 4 displays the user profile features. Users or visitors can perform the “Sign Up” or “Login” actions using their Google or Facebook accounts.



Figure 5. Menu Display in the CakTrip Application

Figure 5 shows the main interface displayed after the user logs in, which consists of four primary menus Home, History, Order, and Profile. In the Home menu, users can browse various tourism categories available in Surabaya. The History menu allows users to view their previous transaction records, while the Order menu displays the e-tickets they have purchased. Meanwhile, the Profile menu enables users to update personal information, adjust application settings, and log out of their account.

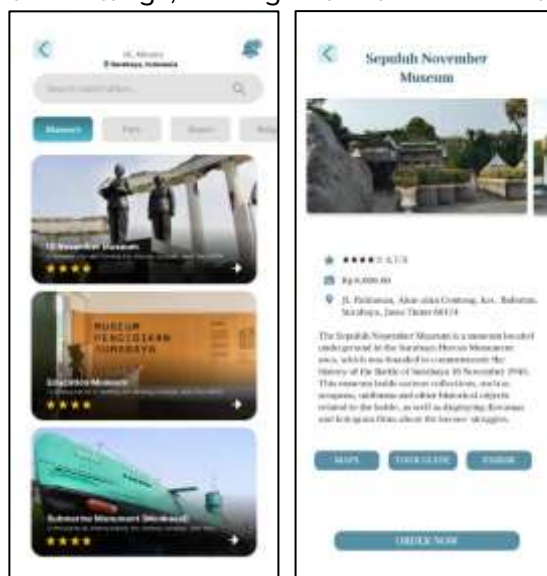


Figure 6. Searching for Tourism Categories in Surabaya

Figure 6 presents the category search interface for tourist destinations in Surabaya. At the top section, users can see categories such as Museum, Park, Beach, and Religious Tourism. Visitors can select a tourism destination and click the arrow icon to view details including ratings, ticket prices, location, descriptions, and three additional buttons below: maps, tour guide, and parking.

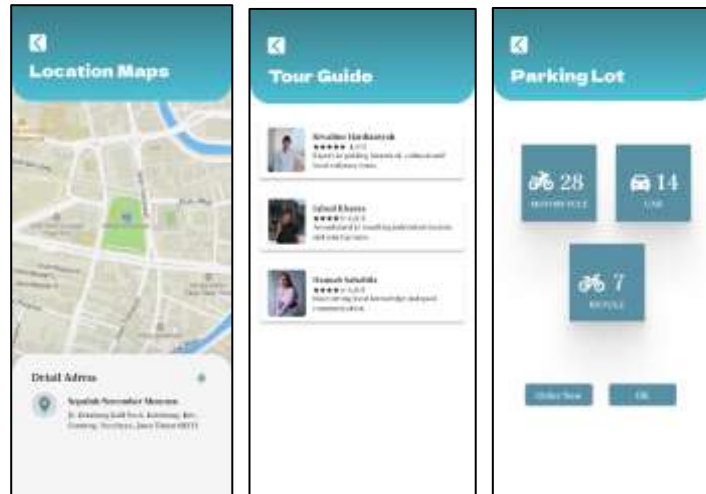


Figure 7. Details for Maps, Tour Guide, and Parking Lot

Figure 7 presents the detailed display of the tourist information, which includes a Maps feature showing the location of the destination, a Tour Guide feature available only for museum attractions to assist users in exploring the site, and a Parking feature that provides information on the number of available parking spaces.

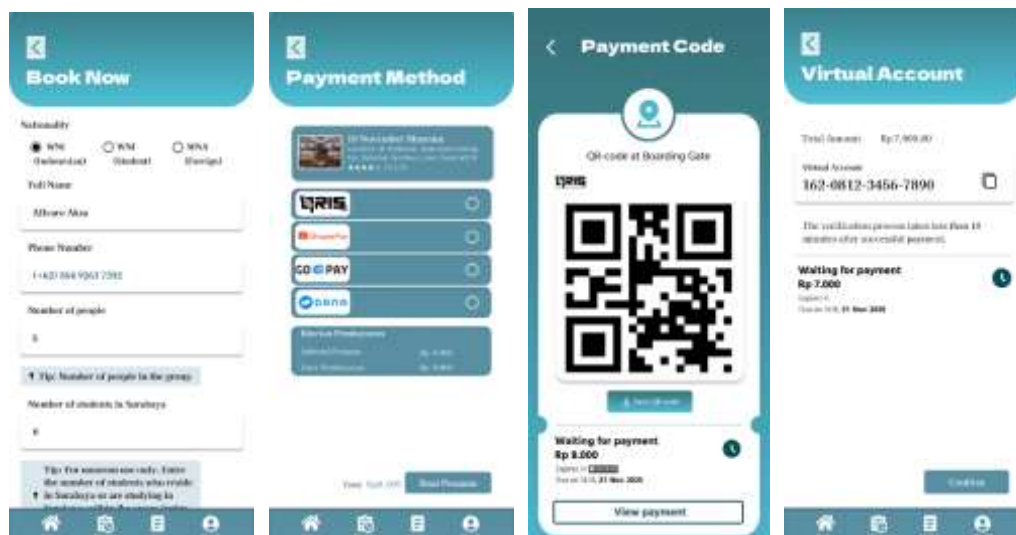


Figure 8. Order Details in the CakTrip Application

Figure 8 presents the payment details page from the previous screen. It includes visitor categories such as Indonesian Citizen (Non-Student), Indonesian Citizen (Student), and Foreign Tourist. After filling in the required personal data, users can click “Apply” at the bottom. The process then continues to the payment method selection, with available options such as QRIS and ShopeePay using Virtual Account, which are currently supported in this prototype.

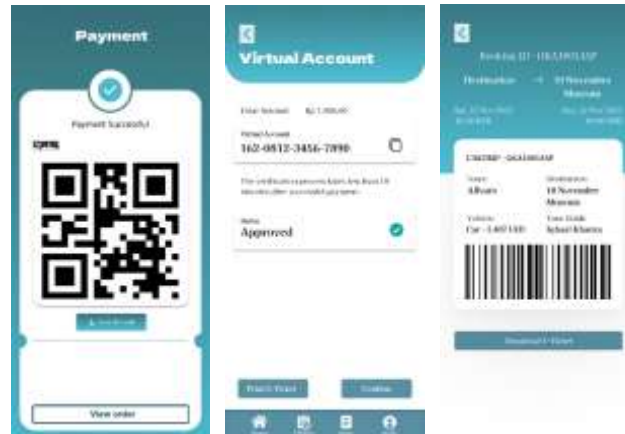
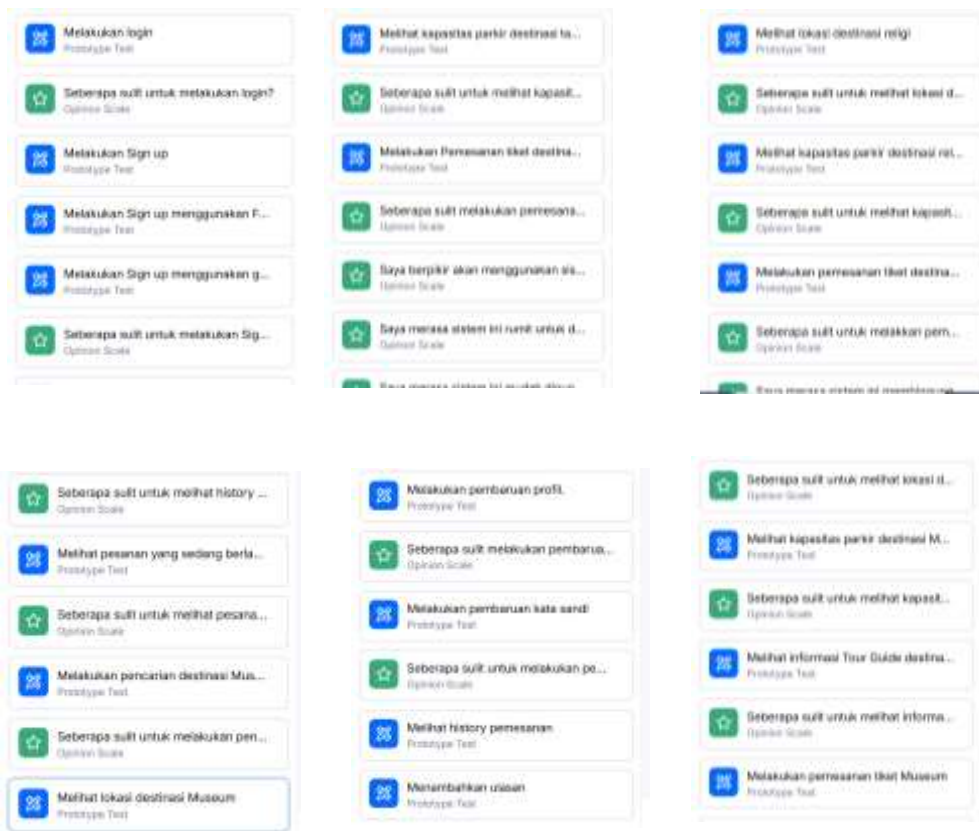


Figure 9. Successful Payment and E-Ticket Display

Figure 9 illustrates the interface shown after the payment process either through QRIS or Virtual Account has been successfully completed. At this stage, the user is automatically provided with the e-ticket for the selected tourist destination.

Testing

In the final stage, the application was tested using a digital prototype designed in Figma. This usability testing aimed to assess how effectively users could operate the application while interacting with the system.



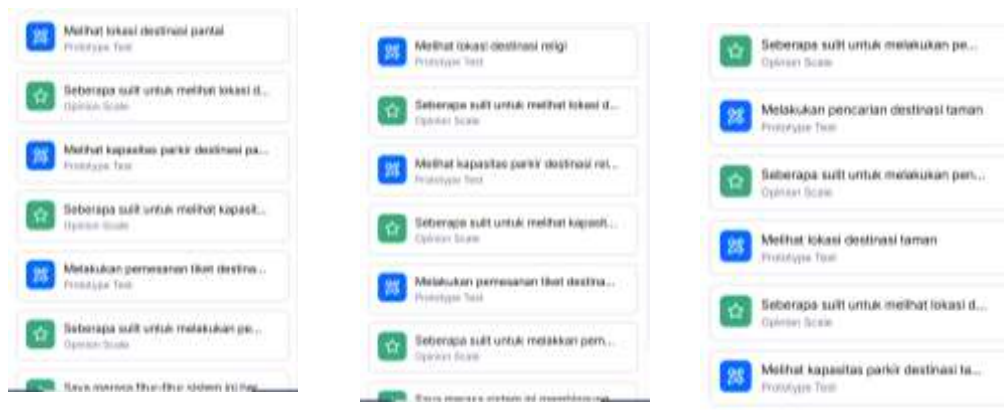


Figure 10. Preview testing questions

There were several tests conducted, including a series of prototype tests that were arranged in a clear and detailed sequence and executed step by step. Each prototype test included the results provided by users who participated in the testing, and the findings obtained were as follows:

- a. Logging in: 90.9% success rate
- b. Signing up: 100.0% success rate
- c. Signing up using Facebook: 100.0% success rate
- d. Signing up using Google: 100.0% success rate
- e. Updating profile: 100.0% success rate
- f. Updating password: 100.0% success rate
- g. Viewing booking history: 100.0% success rate
- h. Adding a review: 100.0% success rate
- i. Viewing ongoing bookings: 100.0% success rate
- j. Searching for Museum destinations: 100.0% success rate
- k. Viewing Museum destination location: 100.0% success rate
- l. Viewing Museum destination parking capacity: 100.0% success rate
- m. Viewing Museum Tour Guide information: 100.0% success rate
- n. Booking Museum tickets: 100.0% success rate
- o. Searching for park destinations: 100.0% success rate
- p. Viewing park destination location: 100.0% success rate
- q. Viewing park destination parking capacity: 100.0% success rate
- r. Booking park destination tickets: 100.0% success rate
- s. Viewing beach destination location: 100.0% success rate
- t. Viewing beach destination parking capacity: 100.0% success rate
- u. Booking beach destination tickets: 100.0% success rate
- v. Viewing religious destination location: 100.0% success rate
- w. Viewing religious destination parking capacity: 100.0% success rate
- x. Booking religious destination tickets: 100.0% success rate

5. Conclusion

Based on the results of this study, it can be concluded that the application of the Design Thinking method in developing the CakTrip mobile tourism application provides significant benefits in improving the quality of tourism information services in Surabaya. The Empathize stage enabled the researchers to gain a deep understanding of user needs, particularly the difficulties users face in accessing centralized and accurate

tourism information. Furthermore, the Define, Ideate, and Prototype stages facilitated the formulation of relevant solutions, including the development of a structured and intuitive user flow and interface design. The prototype visualization created using Figma helped illustrate how users interact with key features such as destination search, ticket booking, parking quota checking, and other supporting services. The testing results showed a very high success rate across all usage scenarios, demonstrating that the application design successfully meets user needs and expectations. Therefore, the CakTrip application not only provides a practical solution to the issue of fragmented tourism information but also has the potential to contribute significantly to enhancing the tourist experience and supporting tourism sector development through the optimal use of digital technology.

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