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HUMAN COMPUTER INTERACTION

Project Title :
SiswaRide

Report 2 :
High-Fidelity Prototyping and Evaluation

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Video Presentation Link : **Video Presentation HCI**

Table of Contents

List of Figures

List of Tables

1. Introduction

SiswaRide is a specialized application that is designed to address the transportation challenges faced by the UKM community, particularly for students and staff inside of UKM. The objectives of SiswaRide are to simplify transportation for UKM Students, to help users navigate the campus and surrounding area efficiently and also to provide an eco-friendly ride-sharing.

Navigating inside the UKM can be hard and challenging for students and staff, especially for those who live off-campus. The current issues with campus transportation are limited access to convenient rides, high transportation costs and time inefficiencies when commuting to places like faculties building and other campus's facilities.

Nowadays, ride sharing and cashless payment methods have become integral parts of modern transportation solutions. SiswaRide is designed to solve these issues by providing a student-focused platform for safe and convenient ride-sharing within the UKM. SiswaRide also offers functions such as real-time matching, cashless payment method and optimized routes to solve the problems listed above. These features help users to find the faster, most eco-friendly and affordable transportation options and enhance their commuting experience.

The advantages of the offered functions such as ride sharing, can help students and staff save time, reduce transportation costs and travel in an environmentally sustainable way. Through these functions, SiswaRide can create a seamless transportation experience for all users.

Table 1 Advantages of SiswaRide App among 3 groups of users

Advantages	**User 1 (UKM Students)**	**User 2 (UKM Staff)**	**User 3 (Students with Vehicles)**
Convenience	✔	✔	✔
Time-Saving	✔	✔	✔
Eco-friendliness	✔	✔	✔
Cost-effectiveness	✔	✔	✔
Income generation	X	X	✔

2. Interface Design for Proposed Function

In this section, the high-fidelity interface designs for the proposed functions of SiswaRide apps are presented.

SiswaRide app's interface was developed using Figma. Figma is a prototype tool used for designing user interfaces, creating wireframes, and building interactive prototypes for websites and applications. Functions offered as a solution to the problems are scalability, reliability, usability, flexibility and efficiency.

a. Sign up

In Figure 1, you'll find the iterative design for the Sign Up interfaces. For new users, they need to enter their details. Once the required information is submitted, users will receive a One-Time Password (OTP) for verification, ensuring secure account creation. The interface is designed for simplicity and ease of use, guiding users through each step seamlessly.

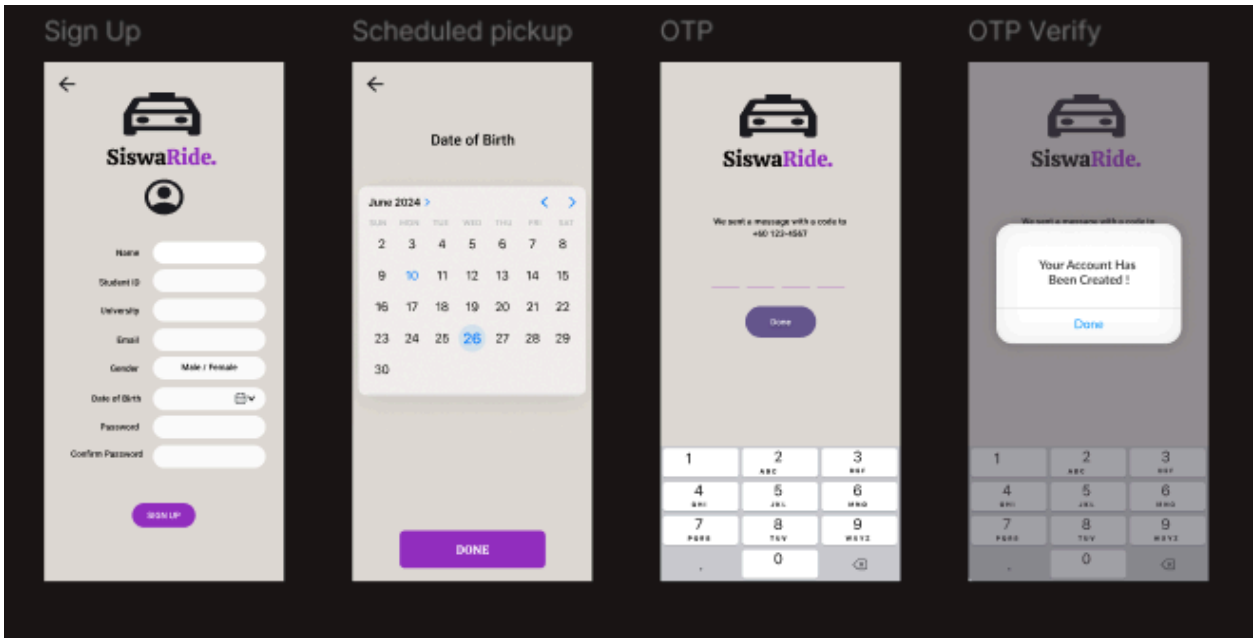


Figure 1 Sign Up Interface

b. Login

Figure 2 shows an interface for Login once the user has successfully created their account.It includes options for password recovery via email siswa verification, ensuring account

accessibility even in case of forgotten credentials. The design emphasizes clarity and quick navigation for returning users.

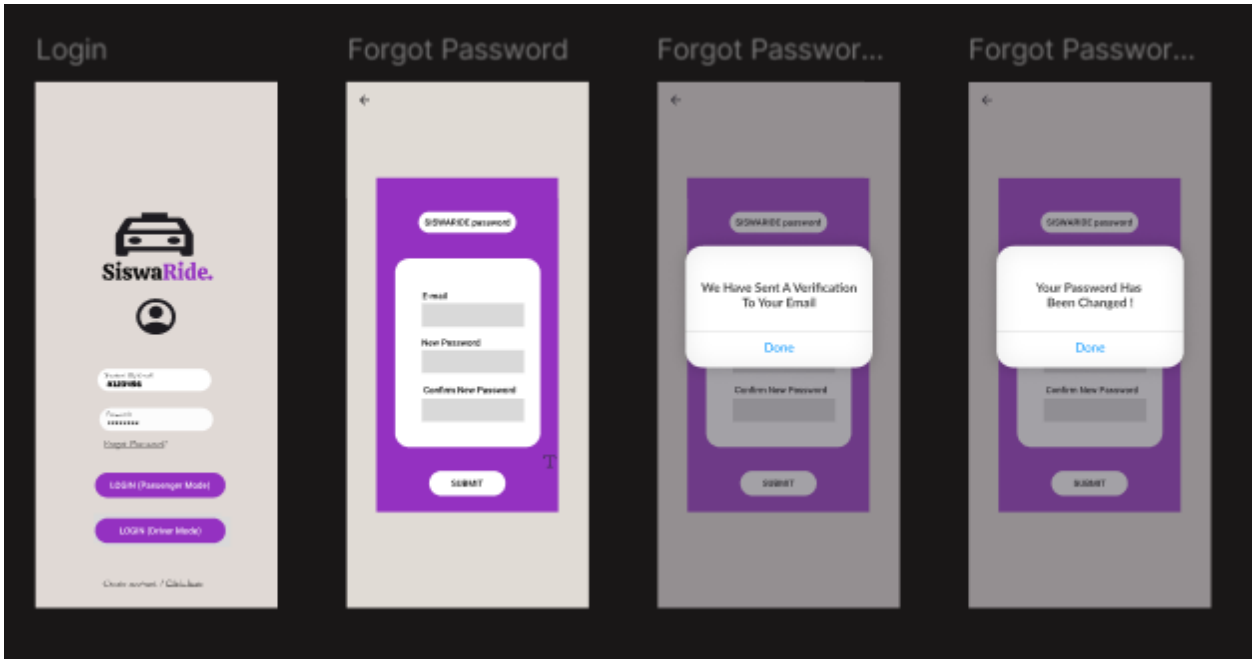


Figure 2 Login Interface

c. Profile Management

The profile interface provides users with a centralized hub to view and edit their personal information. This ensures that users can keep their details up-to-date effortlessly, enhancing personalization and user satisfaction.

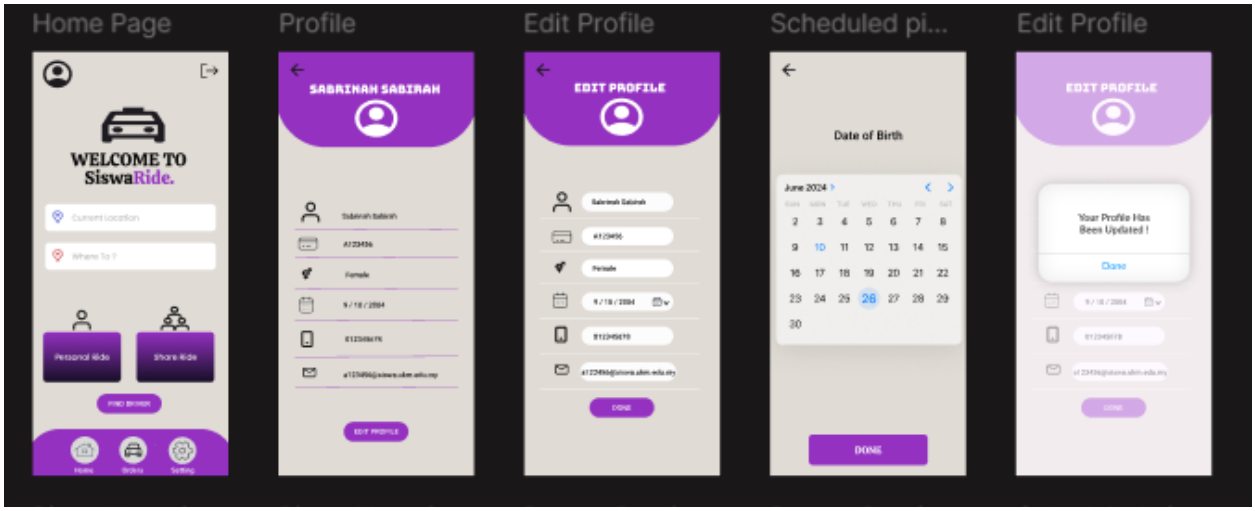
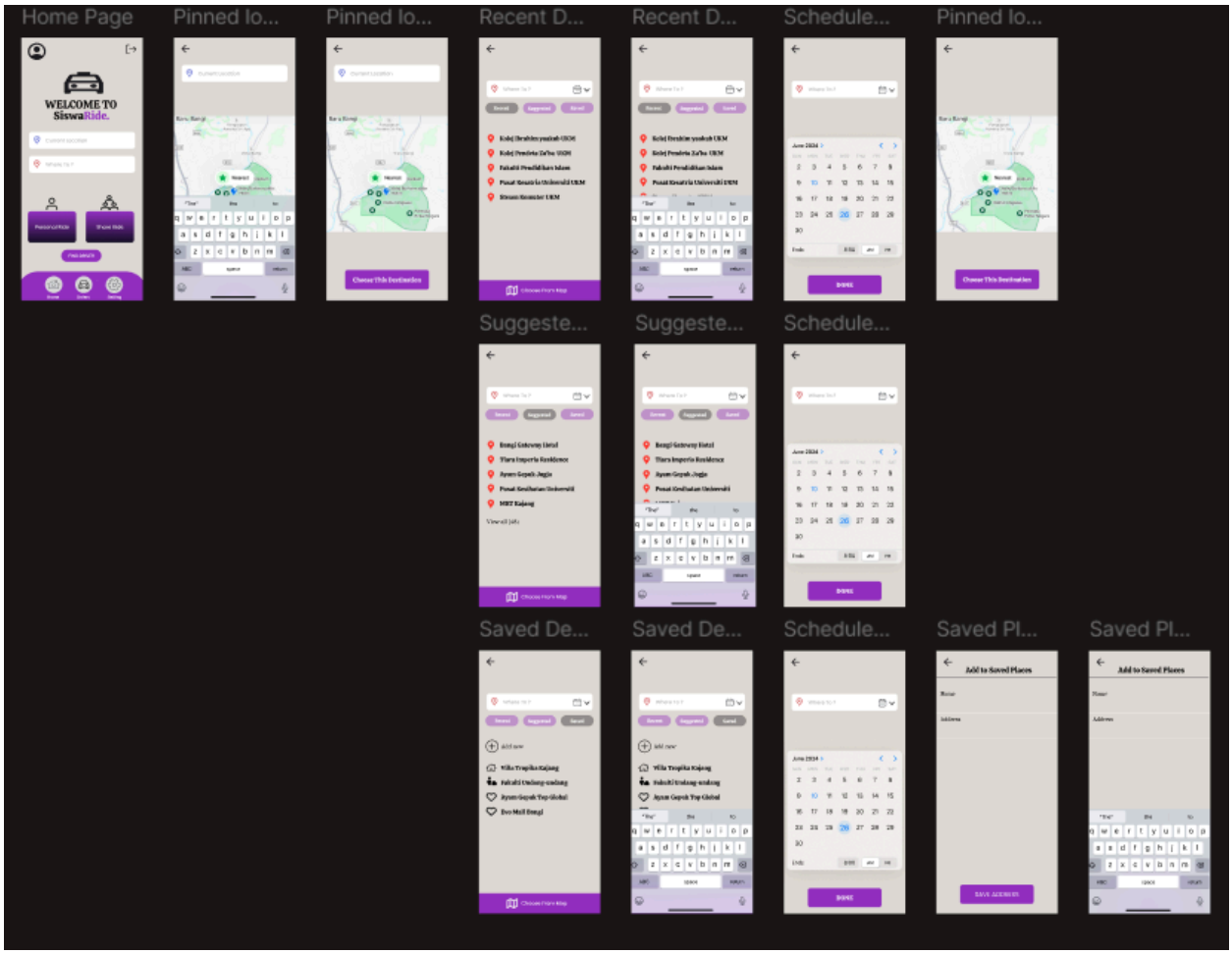


Figure 3 Profile Management Interface

d. Ride Booking

In figure 4, the booking interface allows users to select their destination, preferred ride type (personal ride or share ride), schedule and payment method. It also integrates a points-based rewards system, providing a comprehensive and user-friendly booking experience.



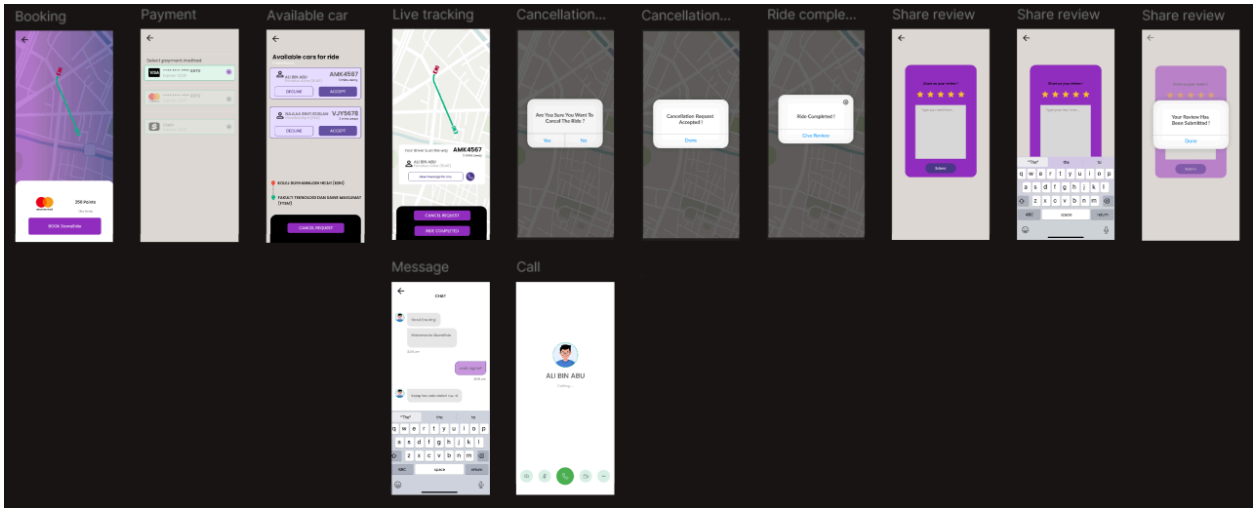


Figure 4 Ride Booking Interface

e. Points System

The points feature rewards users for every completed booking, promoting loyalty and consistent app usage. Users earn 10 points per kilometer traveled, and 100 points are equivalent to RM 1. This system adds a gamified element to the platform, encouraging engagement while offering tangible benefits.

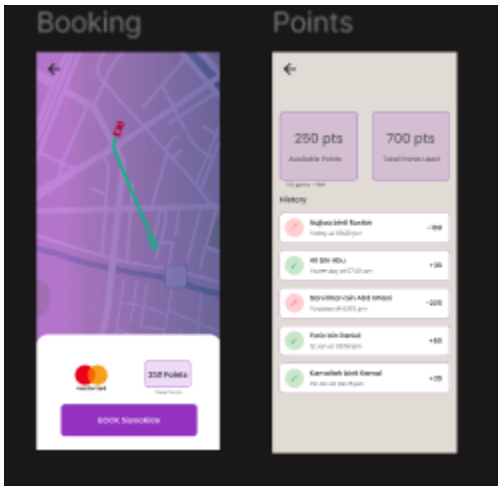


Figure 5 Points System Interface

f. Driver Mode

Figure 6 shows the Driver Mode interface which transforms the app into a tool for users offering rides. It provides features to manage ride offers, track earnings and view completed trips, streamlining the experience for student drivers looking to earn extra income.

Figure 6 Driver Mode Interface

3. Heuristic Analysis of Proposed Interface Design

Heuristic analysis on the SiswaRide interface design is performed and evaluated based on the usability heuristics.

For each heuristic, detailed examples was demonstrate in the interface design adheres to the principles outlined:

I. **Recognition rather than recall**
- Features like distinct buttons enable users to easily identify and select their intended action without making mistakes.

II. **Visibility of system status**
- The interface ensures that users are always informed about their current status, such as subscription status is displayed in the settings section, providing assurance that the system is functioning as intended.

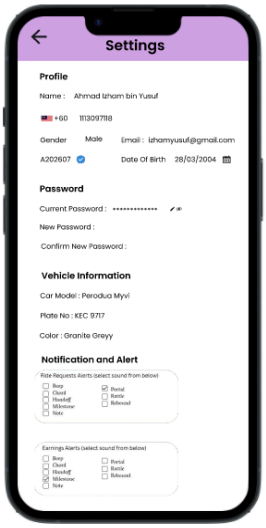
III. **Flexibility and efficiency of use**
- “Saved” and “Recent” options provide shortcuts for frequent destinations, allowing experienced users to navigate efficiently.

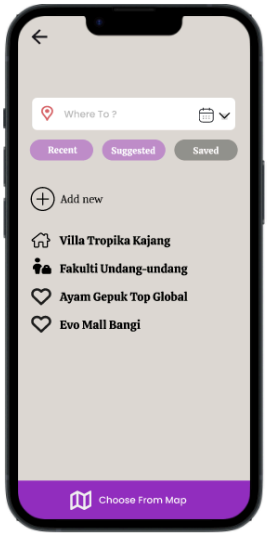
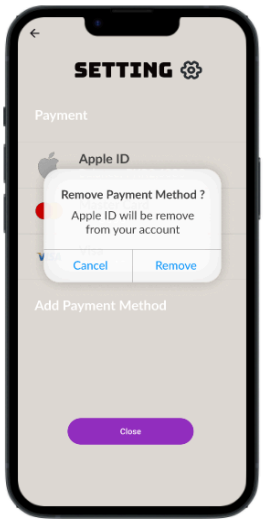
IV. **Error Prevention**
- To prevent mistakes, the interface uses confirmation dialogs for critical actions

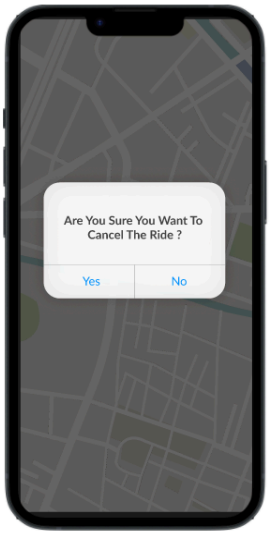
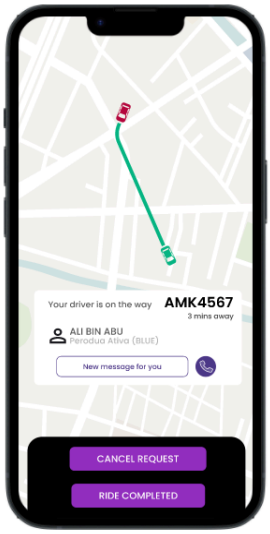
V. **User control and freedom**
- The interface offers users control over their actions and the ability to undo or cancel.

VI. **Aesthetic and minimalist design**
- The design maintains a clean and uncluttered look with only the most essential elements displayed.

Table 2 Heuristic Analysis for the SiswaRide App

Issue	**Description**	**Interface**
Recognition rather than recall	• SiswaRide interface provide a visible options and clear labels such as “Driver Login” and “Passenger Login” allowing them to recognize their intended action rather than recall • The use of distinct buttons ensures that users can easily navigate the app without confusion	
Visibility of system status	• SiswaRide’s system offers visibility of the system's current status where users can view and manage their profile details and other notifications. • The interface also displays active subscription status or settings directly to ensure users that their preferences are being tracked correctly.	

Flexibility and efficiency of use	• SiswaRide interface provides an alternative and personalized options such as “Saved” or “Recent” destinations that allowing users to quickly access frequently used locations without having to re-enter them • “Add New” option allows users to add and save locations as needed that improve efficiency for both novice and experienced users.	
Error Prevention	• When a user attempts to remove a payment method, the system will display a confirmation dialog. • This dialog can prevents accidental deletions and ensures users are aware of the consequences of their actions	

User control and freedom	• The SiswaRide interface provides users the ability to undo or cancel actions that allows users to fully control their actions. • For example, dialog will display “Are You Sure You Want to Cancel This Ride” allows users to navigate and interact with the system comfortably	
Aesthetic and minimalist design	• The SiswaRide interface provides a clean and minimalist design with only essential information displayed and avoids unnecessary clutter. • For example SiswaRide interface provides a simple route map, fare details and action buttons, ensuring users can focus on current tasks. The layout displayed a balance of aesthetic and functionality.	

4. App Prototype Evaluation

In this part, you need to explore the critical elements of user evaluation, providing important insights regarding the functionality and ease of use of your suggested application which is SiswaRide. The user evaluation process includes the following key components:

a. Task briefing & test plan
b. User feedbacks

a. Task briefing & test plan video

Task briefing acts as a guideline for users, providing a list of tasks to be performed during evaluation. You are required to prepare the task brief and steps for the **SEVEN (7) main tasks to solve the problem that your group had mentioned** in SiswaRide. This briefing ensures participants understand their objectives, enabling you to assess how well your application fulfills their needs.

Showcasing the interface navigation flow was produced in a video recording which demonstrated the navigation for all tasks. The video helps users to understand their tasks before the Apps evaluation begins. This will offer a comprehensive visual representation of the interface and user experience. Link of videos for app prototyping are as follows,

https://drive.google.com/drive/folders/1-TvT7Gl88k3STs2VPKh0OSK38TkbkTvq

Table 3 shows the task brief and test plan for E-Book Users

Table 3 Task Brief and Test Plan for SiswaRide Users

	Passenger	Driver
Task 1 Register/Login	(a) Register and login : Step 1: Click "Click here" right below the login page Step 2 : Fill in the information Step 3 : Enter the verification code Step 4 : Click button "Done" when the popup screen appear Step 5 : Click button "LOGIN (Passenger Mode)" (b) Forgot password Step 6 : Click "Forgot Password?" if you forgot and	(a) Register and login : Step 1: Click Click here right below the login page Step 2 : Fill in the information Step 3 : Enter the verification code Step 4 : Click button "Done" when the popup screen appear Step 5 : Click button "LOGIN (Driver Mode)" (b) Forgot password Step 6 : Click "Forgot Password?" if you forgot and

	want to reset your password Step 7 : Fill in the information and click “SUBMIT” Step 8 : Click “Done” button on popup screen	want to reset your password Step 7 : Fill in the information and click “SUBMIT” Step 8 : Click “Done” button on popup screen
Task 2 View/Edit Profile	Step 1 : Click button “👤” to view profile Step 2 : Click “EDIT PROFILE” button to edit your profile Step 3 : Update and fill in the information Step 4 : Click button “DONE” Step 5 : Click button “Done” on the popup screen	Step 1: Click button “>” right next to setting Step 2: Change the information on the profile section
Task 3 Settings	Step 1 : Click “⚙️” button on bottom right of main menu (a) Payments Step 1 : Click button “Link more cards” to link or remove payment methods Step 2: Click “Add Payment Method” Step 3: Fill in the information and click button “Add” Step 4: Click button “Done” on the popup screen Step 5: Click button “Remove” Step 6: Click button “x” on the payment method that want to be removed Step 7: Click button “Remove” or “Cancel” to decide whether you want to remove it or not Step 8 : Click button “Done” on the popup screen (b) Ride History Step 1: Click button “▸” right	Step 1: Click button “>” right next to setting (a) Profile Step 1: Update your profile information Step 2: Click “Done” button (b) Password Step 1: Enter your Current Password Step 2: Enter your New Password Step 3: Enter your Confirm New Password Step 4: Click “Done” button (c) Notification and Alert Step 1: Tick on the preferred setting for Ride Requests Alerts Step 2: Tick on the preferred setting for Earnings Alerts

	next to Ride History Step 2: Click button “Close” or “←” (c) Password & Security Step 1 : Click button “▸” right next to Password & Security Step 2 : Fill in the information to change your password Step 3 : Click button “Done” on the popup screen (c) Report Step 1:Click button “▸” right next to Report Step 2 : Fill in the information to propose your report Step 3 : Click button “Submit” Step 4 : Click button “Done” on the popup screen (d) Language Step 1 : Tick on one of the boxes to choose your language. (e) Delete Account Step 1 : Click button “DELETE ACCOUNT” on bottom mid of setting page Step 2 : Fill in the information Step 3 : Click button “Done” on the popup screen	
Task 4 Book Ride / Accept Ride	Step 1: Click on “Current Location” text box Step 2: Type the location to choose current location Step 3: Click “return” key on the keyboard Step 4: Click button “Choose This Destination” Step 5: Click on “Where To ?” text box to choose your	Step 1: Click the dropdown “AVAILABILITY” button to set the driver online Step 2: Click “View nearby customers” button Step 3: On the popup screen, choose the passenger by click on it Step 4: Click the “Start Ride” button if you confirm to pick up

	destination Step 6: You can choose your destination by typing your destination on “Where to ?” text box, choose from “Recent” button,choose from “Suggested” button, choose from “Saved” button or “Choose From Map“ Step 7: Click “Add new” after clicking “Saved” button to save new destination, fill in the information and click “SAVE ADDRESS” Step 8: Click the dropdown calendar button right next to “Where To ?” text, choose the date and time and click “DONE” button to schedule your ride Step 9: Click “Choose From Map“ button Step 10: Click “Choose This Destination” button Step 11: Click “Personal Ride” or “Share Ride” button to choose your ride type Step 12: Click “FIND DRIVER” button Step 13: Click on payment type icon to choose your payment method Step 14: Click on the payment method you want on the screen and click “←” Step 15: Click on “View Points” under your points value to see your points information and click “←” Step 16: Click “BOOK SiswaRide” button Step 17: The screen will show available cars for ride. Click “DECLINE” on the driver you don't want or click “ACCEPT”.	the passenger or click “←” button to choose other passenger Step 5: Click “>>” button Step 5: Click “End Ride” button if the ride is completed Step 6: On the popup screen, click “Confirm Payment” button if the payment completed and click “x” button Step 7: Click “View Ratings” button to see the passenger review. Step 8: Click “x” button on the popup screen

	Click “CANCEL REQUEST” button to cancel your request Step 18: After clicking “ACCEPT” button, the screen will show the distance of the driver and some information Step 19: Click on “New message for you” to chat with the driver and click “←” Step 20: Click on “□” button to call the driver Step 21: To cancel the ride, click on “CANCEL REQUEST” button Step 22: If the ride is completed,click “RIDE COMPLETED” button Step 23: If you want to give a review, click on the “Give Review” button on the popup screen. If not , just click “x”	
Task 5 Rating and Reviews		Step 1: Click button “>” right next to Rating and Reviews Step 2: The information of the past ride with passengers including rating and reviews will be shown. Step 3: Click “←”
Task 6 Earnings and Payments		Step 1: Click button “>” right next to Earnings and Payments Step 2: It will show the total earnings for today and overall. Click “Transfer to Mastercard” button to withdraw earnings to bank account Step 3: Click “Yes” or “No” button to proceed the withdrawal or not Step 4: Click “x” on the

		successful transfer popup screen Step 5: Click "←"
Task 7 Support		(a) Safety Guidelines Step 1: Click button ">" right next to Safety Guidelines to see our safety guidelines. (b) Contact and Support Step 1: Click button ">" right next to Contact and Support to see our safety guidelines. (b) FAQ for drivers Step 1: Click button ">" right next to FAQ for drivers .

b. User feedback

For this phase, we are required to gather feedback from the targeted users to assess the usability and effectiveness of our application. Follow these steps to conduct user feedback:

i. Select Three or More Target Users

- Choose at least three individuals who represent your target audience.
- Consider their demographics, preferences, and familiarity with similar applications.

ii. Feedback Collection Session

- Arrange individual or group feedback sessions where users interact with your application/system/solution.
- Clearly explain the tasks or scenarios you want them to explore within the application.

iii. Record User Feedback

- During the session, record users' feedback comprehensively. Capture their comments, observations, and suggestions regarding the user interface, functionality, and overall experience.
- Document both positive aspects and areas that need improvement.

iv. Use Feedback Template

- Create a structured feedback template or questionnaire to ensure you cover all relevant aspects of the user experience.
- Include open-ended questions for detailed responses.

User Feedback Link :

https://docs.google.com/forms/d/1kVoouf7IIy8f1YSYpQa8JlNwQ7RVdxury-A_BA1h2L0/edit#responses

Table 4 presents user feedback specific to SiswaRide.

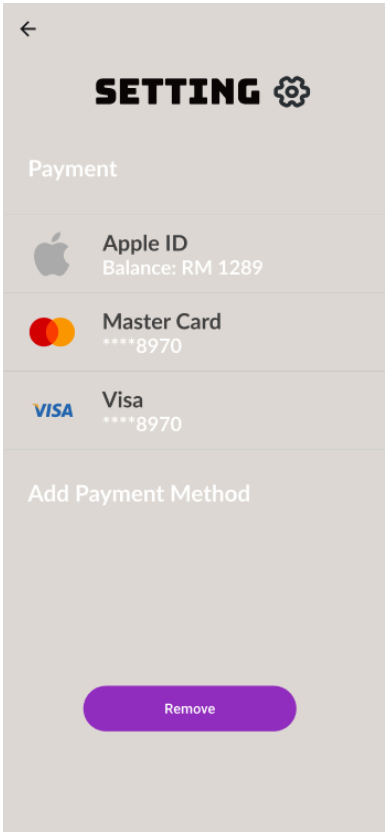
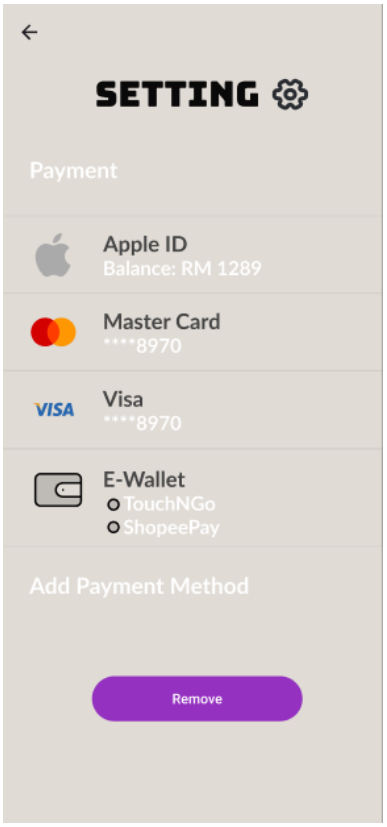
Table 4 User's Feedback

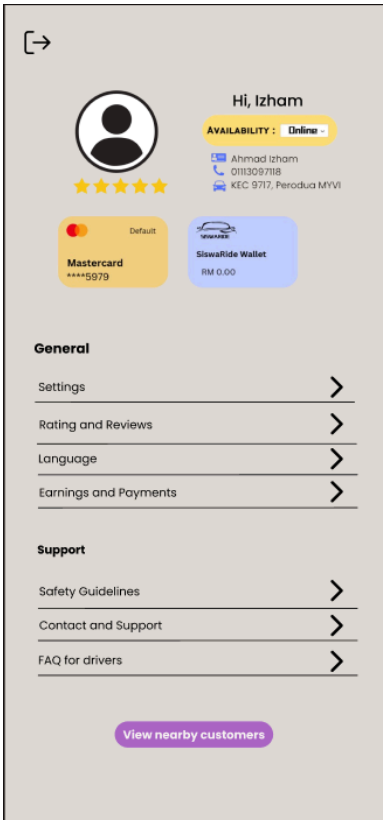
	Passenger Mode	**Driver Mode**
Task 1 Register/Login		
Task 2 View/Edit Profile		
Task 3 Settings	User 1: 1. There are only a few payment method options available.	User 3 : 1. The settings interface doesn't utilize the available space effectively.
Task 4 Book Ride / Accept Ride		User 2: 1. The "View Nearby Customers" feature should have higher contrast, as it is the main function in driver mode.
Task 5 Rating and Reviews	-	
Task 6 Earnings and Payments	-	
Task 7 Support	-	

5. Updating Proposed Interface Based On User Feedback

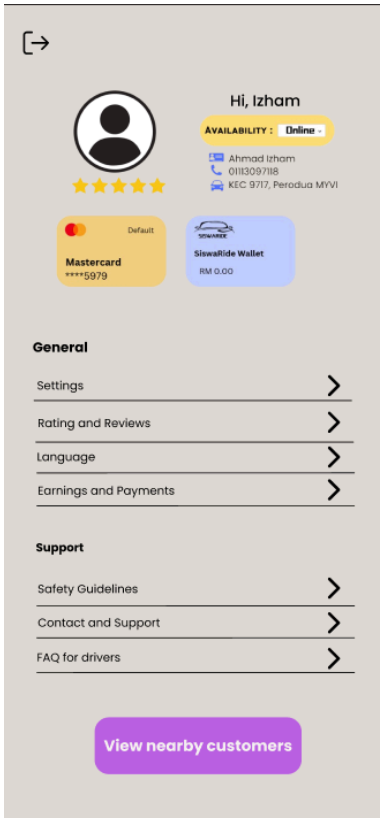
In this phase of the project, we integrated the valuable insights collected from user feedback sessions into the SiswaRide app interface design. We conducted a thorough analysis of the feedback, focusing on both positive aspects and areas requiring improvement. Based on this analysis, we implemented changes to enhance the app's overall usability, navigation, and user experience. The goals of these improvements were to increase clarity, simplify complex steps, and improve user interactions. Table 5, which compares the interfaces before and after the feedback session, highlights changes made to the interface in response to the feedback received.

Table 5 Comparison of the interfaces before and after the user feedback phase

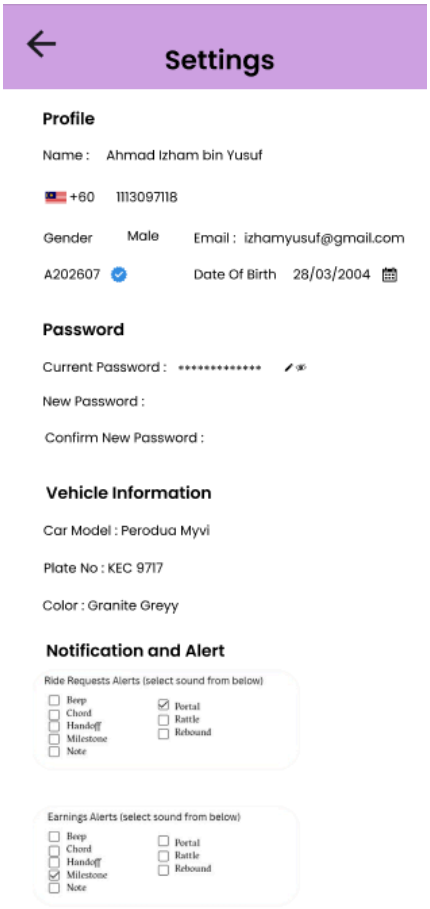
Interface used during Apps Prototyping Evaluation	Updated interface after Apps Prototyping Evaluation
 There are only a few payment method options available. There's no e-wallet option.	 Added e-wallet option in the payment method



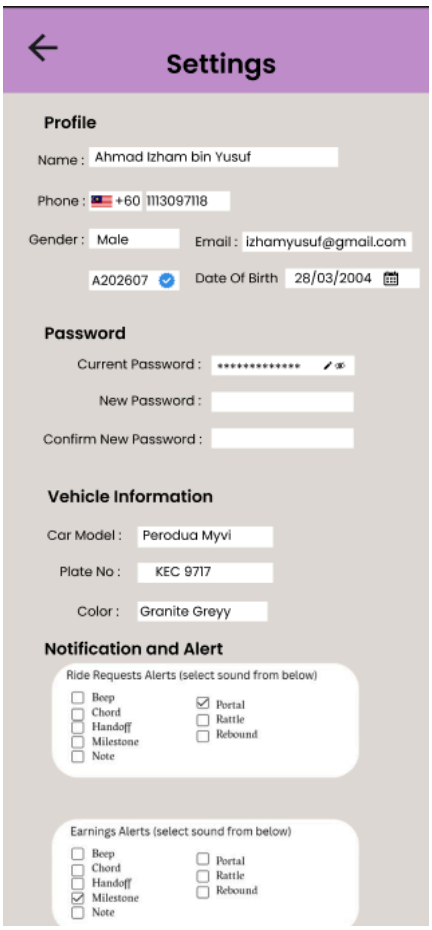
The "View Nearby Customers" feature should have higher contrast, as it is the main function in driver mode



The "View Nearby Customers" feature button has been changed. The button looks bigger and the colors are more contrast.



The settings interface doesn't utilize the available space effectively.



The settings interface has been changed, instead of utilizing the space, we have changed the background color to make it more visible.

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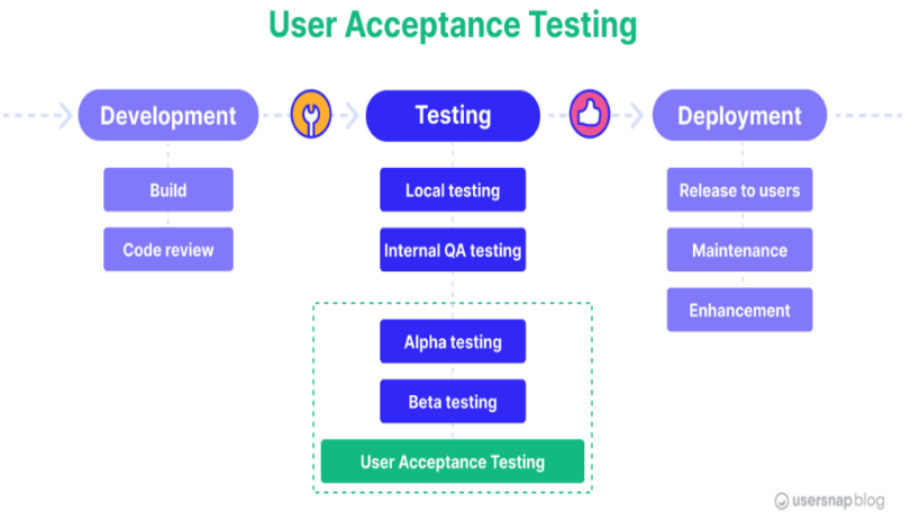
6. Basic Usability Questionnaire

The process of testing software in the real world by its target audience is known as user acceptance testing (UAT), application testing, or end-user testing. Before the tested software is made available to the public, UAT is frequently the final stage of the software testing process. UAT is to verify that software can manage practical activities and meet development requirements.

UAT is useful for improving user transparency and guaranteeing quality in terms of time and software cost. Additionally, UAT gives developers access to real-world data and scenarios, and if it is successful, it can confirm business requirements.



Usability Testing Questionnaire Link

The usability testing questionnaire can be accessed via the following link:

[Google Form Link Here]

Respondents were instructed to complete the form after testing the app prototype. The feedback collected will be analyzed to ensure the interface meets usability requirements.

7. Evaluation Results

According to **Figure 7** , 1 respondent indicated “Agree”, while 5 respondents chose “Strongly Agree”, indicating that our app prototype was generally easy to learn for the participants.

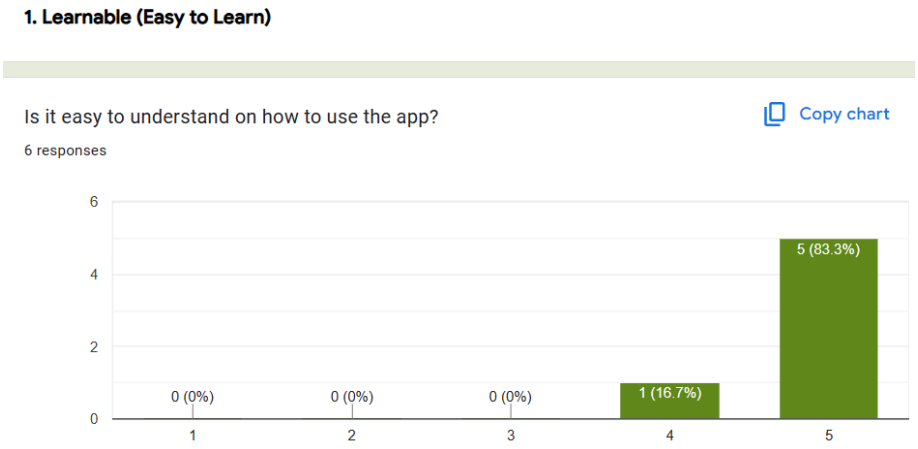


Figure 7 Results of Q1, App Prototype is easy to understand

According to **Figure 8**, 2 respondents selected "Agree," while 4 respondents indicated "Strongly Agree," suggesting that the app's user interface was moderately visible for the participants.

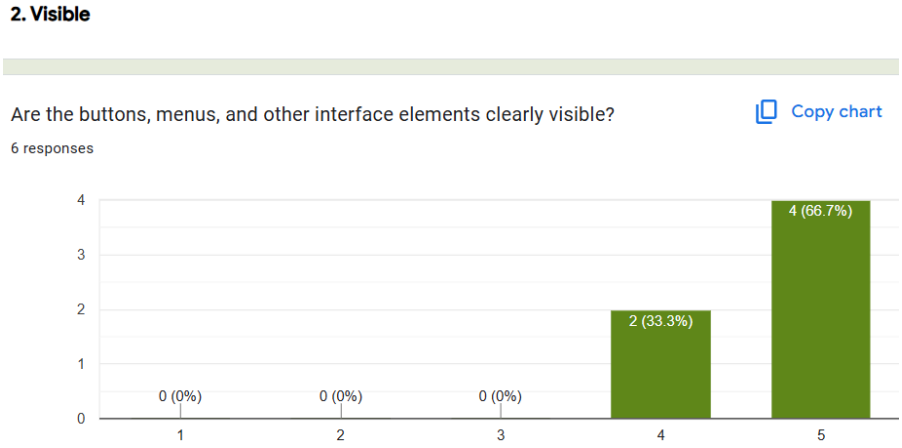


Figure 8 Results of Q2, App Prototype is moderately visible

According to **Figure 9**, 2 respondents indicated "Agree," while 4 respondents chose "Strongly Agree," suggesting that the app effectively minimizes user errors.

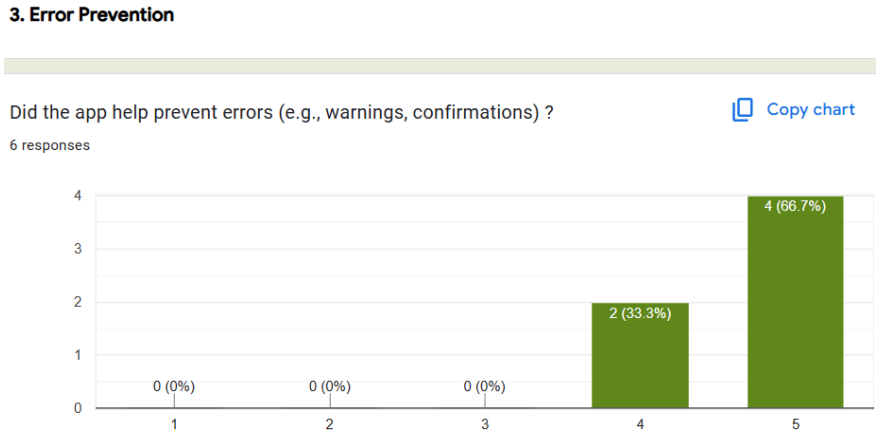


Figure 9 Results of Q3, App Prototype is effective in minimizing user errors

Based on Figure 10, 2 respondents selected "Agree," while 4 respondents indicated "Strongly Agree," highlighting that the app allows users to complete tasks efficiently.

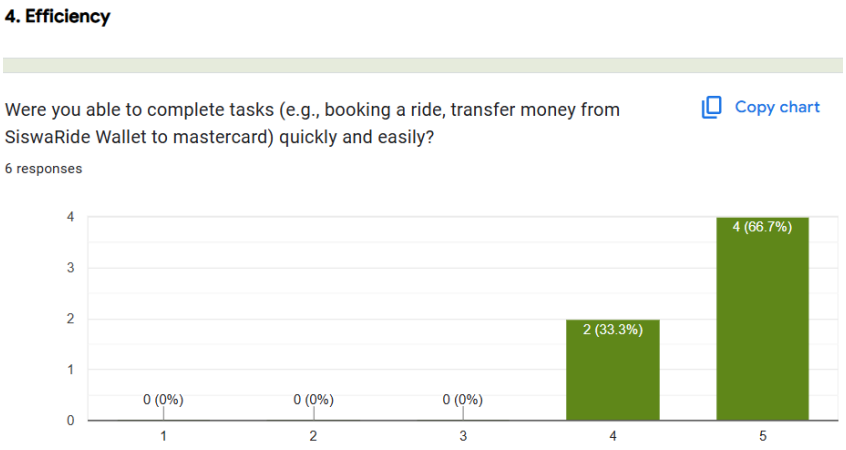


Figure 10 Results of Q4, App Prototype is efficient for user to complete the tasks

Referring to Figure 11, 6 respondents marked "Strongly Agree," showing that the app maintains consistent design and functionality throughout.

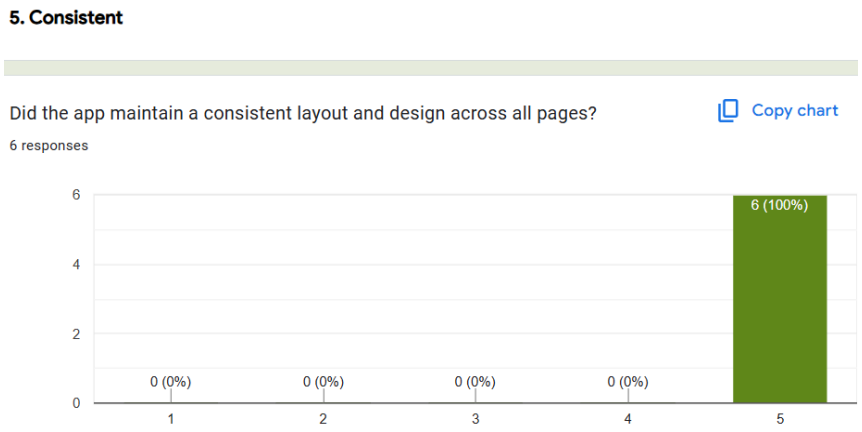


Figure 11 Results of Q5, App Prototype is consistently maintaining the design and functionality

As shown in Figure 12, 5 respondents indicated "Strongly Agree," indicating that the app's use of color and contrast was visually pleasing and accessible.

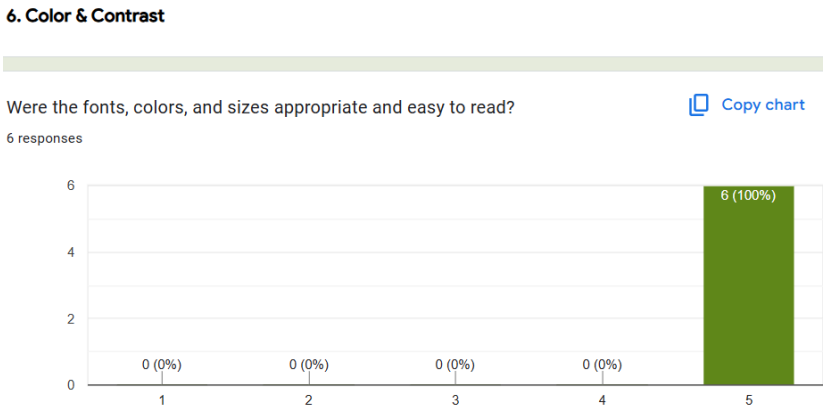


Figure 12 Results of Q6, App Prototype is visually pleasing

8. Conclusion

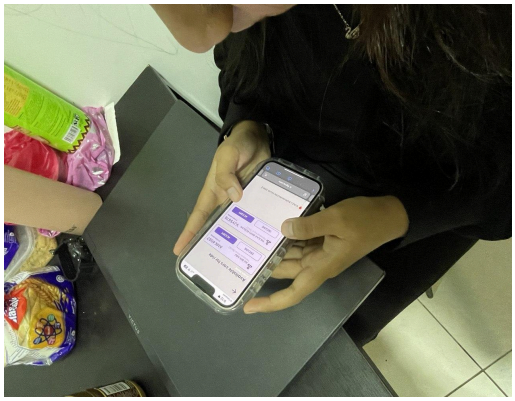
The SiswaRide project is an excellent example of how human-computer interaction concepts may be used to develop an useful, user-friendly solution for the UKM community's transportation problems. With a focus on cost-effectiveness and environmental friendliness, the app includes new transportation technology including ride-sharing and cashless payment methods. It is intended to reduce time and cost limitations while improving staff and student mobility by facilitating access to campus facilities and the surrounding communities.

The project's creation process included several design, prototyping, and evaluation phases. Figma was used to construct the first high-fidelity prototypes, which were then evaluated against heuristic usability criteria to make sure the design followed best practices including user control, minimalism, and error prevention. A key element of the process was user feedback, which resulted in important improvements like the addition of an e-wallet payment option, improved button visibility, and a settings interface that is easier to use.

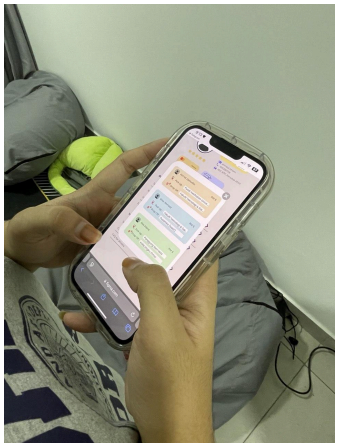
The results of the usability test were mostly good, with participants complimenting the app's visual appeal, consistency, and efficiency. These tests show that SiswaRide helps users perform activities quickly, lowers the possibility of mistakes, and keeps an aesthetically beautiful and usable interface all along the way. By enhancing user interaction and giving students chances to make money, the driving mode and points system features improve value.

In the end, SiswaRide shows how technology can be used to solve practical issues by prioritizing user feedback and using an iterative design process. The project shows how crucial it is to create a balance between usability, functionality, and aesthetics in order to provide a solution that meets every need of its target market. By adding additional features and looking into additional implementation options, other projects could build on these bases.

9. Appendix



User 1



User 2

10. Reference

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