UTM
UNIVERSITI TEKNOLOGI MALAYSIA
Malaysia-Japan International Institute of Technology (MJIIT)

SECP1513 – Technology and Information System

Report: Design Thinking

Topic: Optimizing Transportation for UTMKL Students

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Table of Contents

1 Introduction

In response to challenges faced by University Technology Malaysia Kuala Lumpur (UTMKL) students in commuting, this report details a collaborative initiative to optimize transportation solutions. Acknowledging the vital role of accessible transportation in the student experience, the team explored issues through a design thinking process. Emphasizing teamwork, open communication, and creative problem-solving, the report aims to propose practical, student-centric improvements. The documented collaborative efforts underscore a commitment to creating a streamlined, inclusive, and efficient transportation system for the UTMKL community, contributing meaningfully to student life and academic experiences.

2 Details of Design Thinking Process

In the effort to improve transportation for UTMKL students, the team adopted a design thinking approach. Beginning with understanding students' transportation experiences, figure 1 shows Google Maps was used to observe the routes from UTM to students' accommodations. Focusing on KSJ and Platinum Splendor, where most of the UTM students stay, each team member shared their unique perspective and personal experience with transportation while coming to campus.

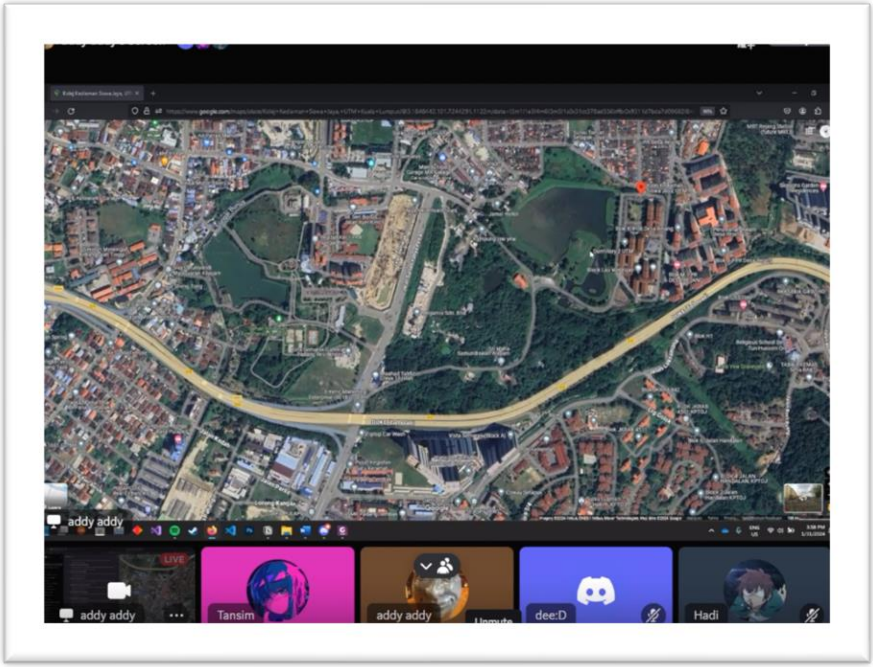

Figure 1. UTMKL Google Maps

The next step was to define the problems more precisely. Shifting from general issues to specific student-related challenges, each issue was listed down in points. After each point was covered, the team discussed effective solutions for them. ChatGPT was also used for additional insight. As a solution, the team proposed establishing a dedicated Telegram channel for UTM student transportation.

The team moved on to the prototype phase, the ride request feature was discussed in detail. Simple designs were created for how it would look and considered how users might interact with it. This step helped to get a clear picture of how the solution would work in real life.

To assess the effectiveness of the ride request concept within the Telegram group, the team went through a testing process. Taking on the role of users, team members submitted ride requests and patiently waited for responses from staff members. This practical testing approach helped to observe and implement the solutions based on real-word experiences. This ongoing testing ensured that the solution is effective for the students of UTM.

The design thinking journey wasn't just about solving transportation issues, it was about creating a user-centric solution that enhances connectivity among UTMKL students. Assigning specific responsibilities to team members at each stage ensured a collaborative approach throughout the design thinking process.

3 Detailed Description

3.1 Problems

Transportation for university students is efficiently managed by the university, a dedicated system meticulously crafted to ensure the safe and reliable transit of students to and from campus.

However, students at UTMKL, specifically those residing in Kolej Siswa Jaya (KSJ) and Platinum Splendor residences, face challenges in safely walking to the campus. This is due to the absence of proper walking routes, leading to increased reliance on alternative modes of transportation such as cars or public transit. This dependence contributes to traffic congestion and environmental pollution. Furthermore, the lack of designated walking paths exposes students to potential dangers, including encounters with stray dogs, particularly in areas with inadequate walking infrastructure.

Students that live outside of KSJ and Platinum Splendor residence have difficulty reaching the campus because the bus stop or train station are not nearby their place. Students may incur higher transportation expenses if they need to rely on alternative modes of transportation, such as taxis or e-hailing, to reach the campus.

Sometimes students have tests at night. So, not many transportation options are available. Bus provided by UTMKL also shuttle until 7.00pm. Students who are unable to secure transportation options at night may be forced to walk long distances or wait in unfamiliar or poorly lit areas, potentially exposing them to safety risks such as accidents or encounters with unsafe individuals. This also increases their expenses on transport.

3.2 Solutions

Based on the challenges faced by UTM students, the team have proposed a solution that involves establishing a dedicated Telegram channel. This channel will serve as a platform for students to request transportation to various destinations, including train stations, the main bus station, and locations both on and off the UTM campus. By fostering collaboration between UTMFLEET staff and UTM students, the Telegram channel aims to facilitate a seamless transportation experience. UTMFLEET staff can provide ride-sharing services, offering flexibility in scheduling based on high demand from students. Simultaneously, UTM students who own a vehicle can contribute to a carpooling initiative for their peers.

Within the Telegram channel, students seeking transportation can directly inquire about the availability of fellow students willing to provide rides to specific locations at desired times. Participating student drivers can then offer their services, specifying associated charges. After that, the student who requests the transport can give their name and matric number. Before the ride is confirmed, the driver can also identify any passengers heading to the same destination, allowing students to split the charges and reduce individual costs. In instances of high demand for transportation to a particular location, UTMFLEET stands ready to provide additional transportation services to ensure students reach their destinations effectively.

3.3 Team Working

Figure 2 shows a dedicated Discord server for the team was created to facilitate communication and collaboration, Discord's video call feature is utilized for virtual meetings and discussions. Different channels within the server are also created to organize discussions, updates, and resource-sharing.

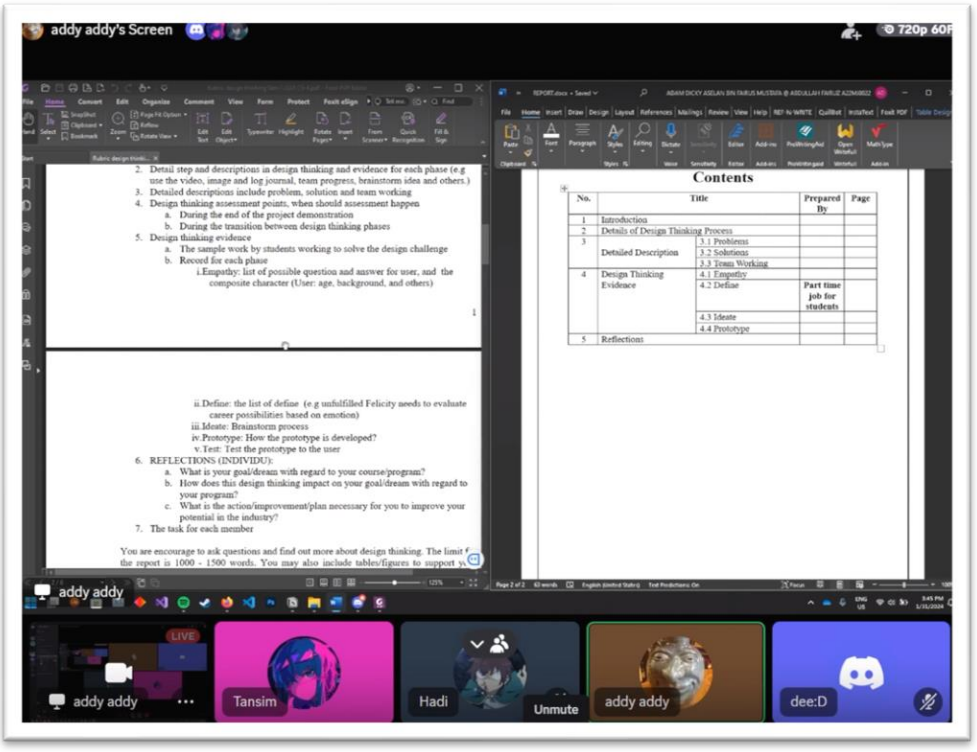

Figure 2. Initiation of Collaboration

Identification of Transportation Issues

In the collaborative effort to enhance transportation for UTMKL students, the team worked collectively to understand the challenges. Visual aids such as Google Maps and images were used to ensure clarity and shared understanding among team members. Every member contributed ideas and shared their experiences. Encouraging a diverse range of perspectives, the team showcased the strength of teamwork in problem identification.

4 Design Thinking Evidence

4.1 Empathy

The Empathy phase of the design thinking process involved conducting a comprehensive Transportation Experience Survey for UTMKL students. This survey aimed to understand the diverse commuting experiences and challenges faced by our users. Figure 3 shows the commute modes of students. Most respondents indicated that they primarily commute to UTMKL using UTMFLEET vehicles, followed by walking and private vehicles.

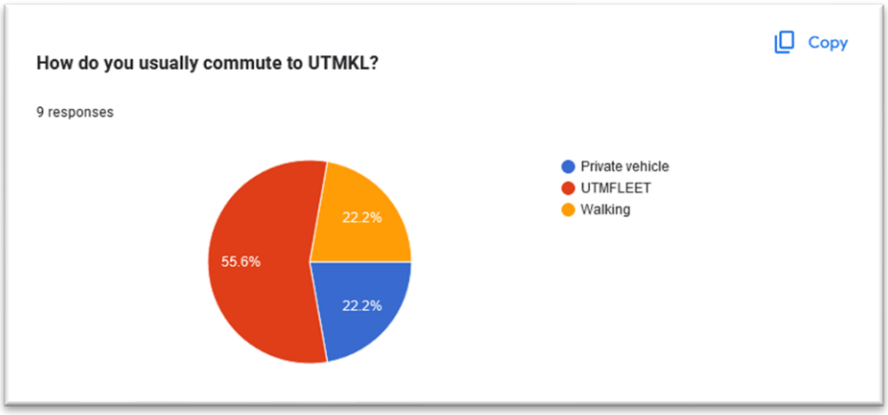

Figure 3. Commute modes

When asked to rate their satisfaction with current transportation options on a scale of 1 to 5, the responses varied. A significant number of participants expressed neutral to moderate satisfaction, indicating room for improvement. Figure 4 shows the scale of one to five satisfaction.

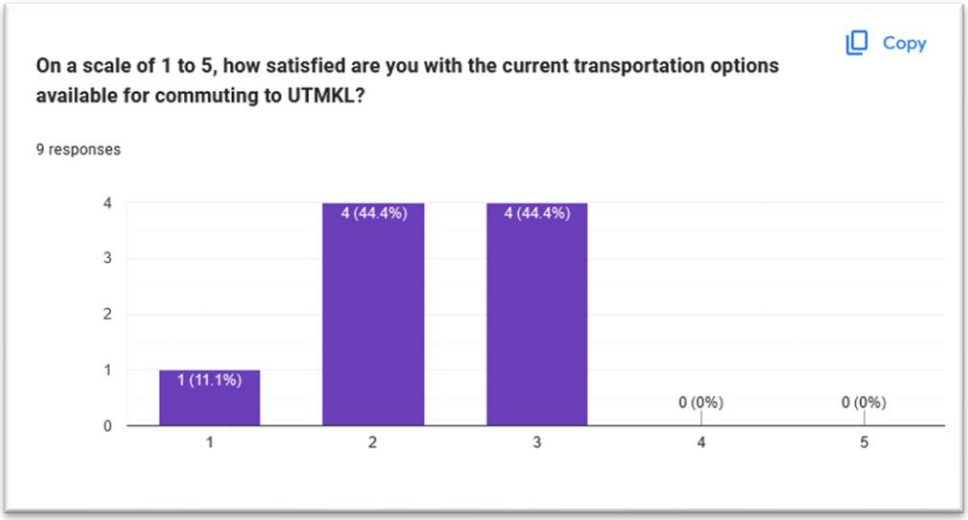

Figure 4. Satisfaction levels

Figure 5 shows a notable percentage of respondents shared challenges and difficulties in reaching UTMKL via their preferred mode of transportation. Common issues included accessibility concerns, long commute times, and safety-related issues.

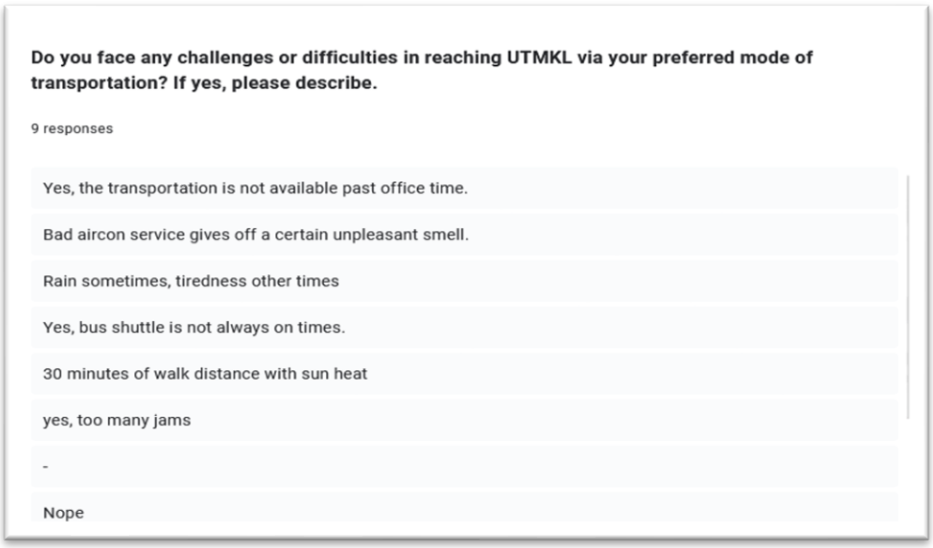

Figure 5. Challenges faced.

Figure 6 shows a significant portion of participants were aware of the transportation services provided by UTMKL, with shuttle services and van services being mentioned. However, there was a notable percentage of respondents who were not aware of these services.

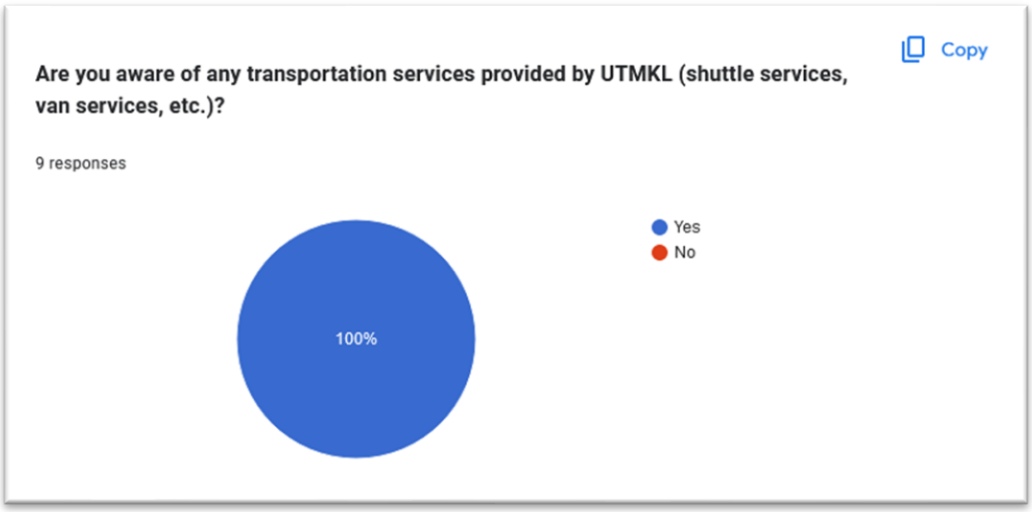

Figure 6. Percentage of awareness of UTMKL services.

Figure 7 shows among those aware of UTMKL transportation services, a considerable number had not utilized them. This suggests potential opportunities to enhance awareness or improve the appeal and accessibility of these services.

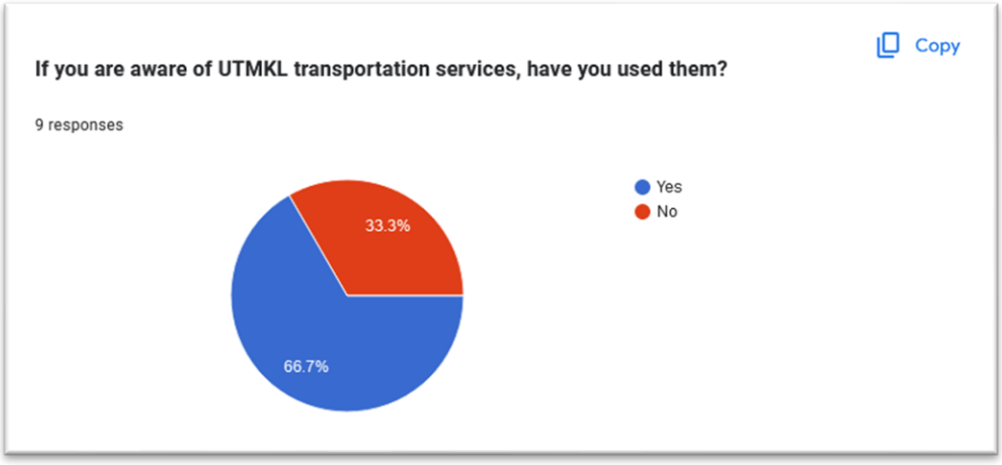

Figure 7. Percentage of students utilized UTMKL services.

Figure 8 shows respondents were invited to suggest improvements or additional services they would like to see in UTMKL transportation options. Common themes included enhanced safety measures, shorter commute times, and more efficient services.

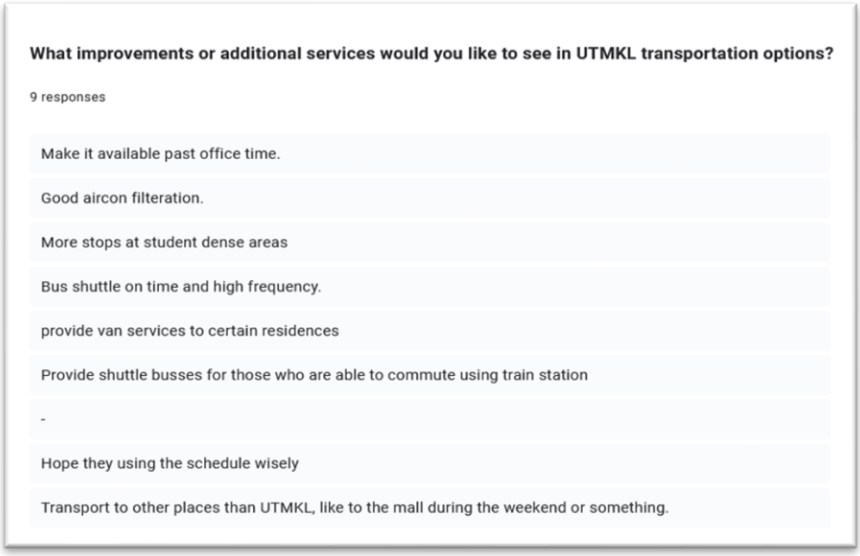

Figure 8. Respondents' suggestion for improvement.

Figure 9 shows the percentage of the average daily commute times of participants. A significant portion reported spending between 30 minutes to 1 hour commuting to UTMKL daily.

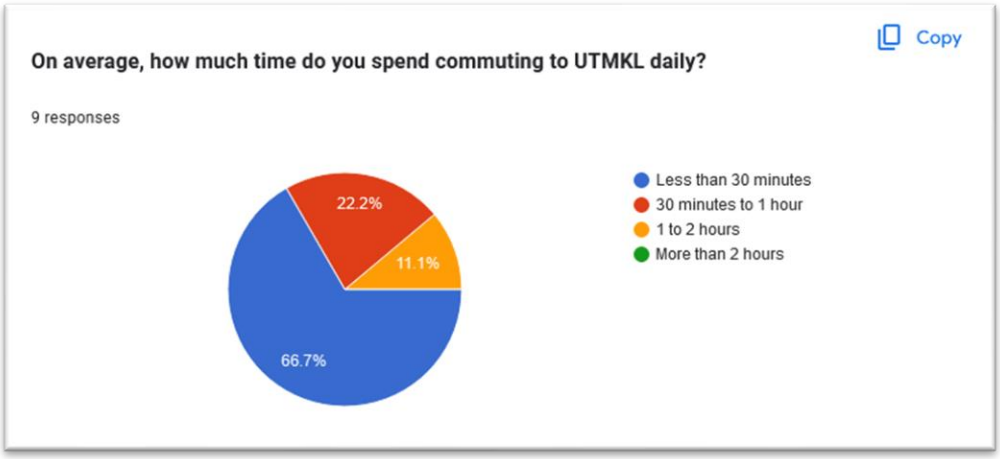

Figure 9. Percentage of student's time to reach campus.

4.2 Define

In the Define phase of our design thinking process, we recognize that staff and students, equipped with a diverse skill set cultivated during design thinking endeavors, have the potential to tap into various opportunities:

Flexible skill application is a diverse skill set developed during academic pursuits and work can be flexibly applied to address specific needs or provide solutions outside the regular scope of responsibilities.

Part-time endeavors offering services part-time allows staff and students to balance their regular commitments while engaging in income-generating activities during their free hours.

Personal branding actively participating in external opportunities contributes to personal branding. This, in turn, enhances visibility and credibility, attracting more opportunities for income generation.

4.3 Prototype

Figure 10 shows an example of how students can ask for assistance in terms of reaching their desired destination, simply just ask away in the Telegram group. It is developed after our brainstorming process.

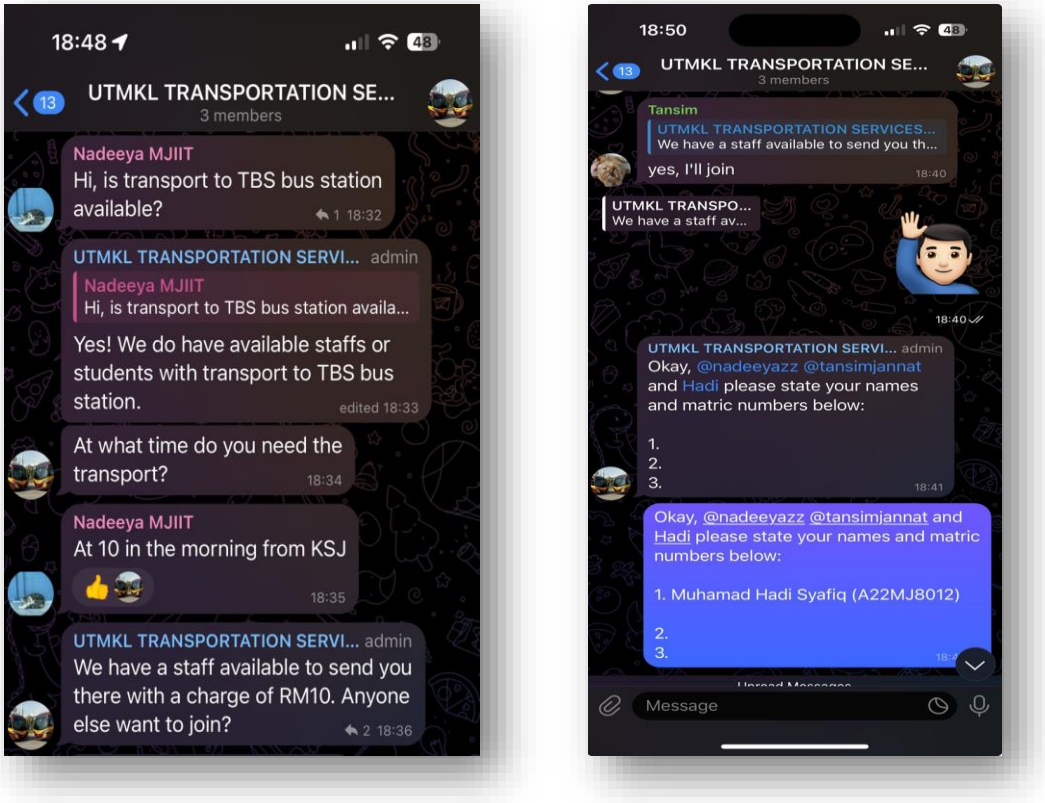

Figure 10. Conversation chat between admin and students for transportation.

5 Reflections

Adam: My goal in software engineering is to be a skilled developer. Design thinking in my program helps me solve real-world problems with user-centered solutions. To improve my industry potential, I'll engage in design thinking projects, collaborate with peers, and attend workshops for hands-on experience, enhancing my problem-solving skills.

Tansim: As a software engineering student, design thinking has greatly influenced my work, since it highlights how important it is to understand user demand beyond coding. This has improved my software usability and inspired me to address user challenges. It also helped me to solve problems beyond technical limitations and improved my capacity to adapt and be creative when solving problems.

Nadeeya: My goal is to become a versatile software engineer proficient in both game and system development. Design thinking is a valuable tool for achieving this, as it emphasizes clear problem definition, ensuring a deep understanding of system development requirements. I must grasp system development principles, including database management, network architecture, and software architecture to improve my future career.

Hadi: As my goal is to be a software engineer that requires me to figure out many problems, design thinking is a good practice to solve complex problems. It urges a deep understanding of human context, behavior, and motivation. Design thinking also uses visual modelling and techniques for more holistic problem solving. My plan to improve my potential in industry is by self-learning many technology stacks and keeping myself up to date with current IT trends.