

MAXIMIZING USABILITY OF IIUM GIGEASE: A SHORT-TERM EMPLOYMENT PLATFORM FOR IIUM STUDENTS AND NEIGHBOURING COMMUNITIES

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ABSTRACT: Due to the rising cost of living in Malaysia, students who typically have no source of income are increasingly facing financial challenges. These challenges often compel them to make sacrifices in essential areas, such as nutrition, in order to survive throughout their study period. In response, the IIUM GIGEASE mobile application was developed as a platform to provide temporary job opportunities for students and the neighbouring communities around IIUM. The project followed the interaction design lifecycle model, which includes stages such as establishing requirements, designing alternatives, prototyping, and evaluation. This paper focuses primarily on the prototyping and evaluation phases. After identifying key features through literature review and surveys, a low-fidelity prototype was created during the designing alternatives phase. Numerous revisions were made to the prototype following user testing. The second prototype was well received, leading to the development of the high-fidelity prototype. The correct use of terminology and clear navigation design were deemed critical for the usability of the GIGEASE application. The project is expected to make a valuable contribution to IIUM and the local Gombak communities, with the potential to significantly improve community wellbeing.

KEY WORDS: *Usability Testing, Interaction Design, Mobile Interface Design, Cost of living*

1. INTRODUCTION

In the International Islamic University of Malaysia (IIUM), especially Gombak Campus, there are many clubs and societies that have been established since IIUM first establishment. As of 2021, a total of 139 student societies and clubs were registered under the Student Affair and Development Division. These societies are categorized as Kulliyah-Based Society, Arts & Culture, Association & Solidarity, Da'wah & Spirituality, Entrepreneurship, Entrepreneurship, Humanitarian & Volunteerism, Intellectual & Knowledge, and many more (IIUM, n.d.).

Each of the clubs and societies has their own programs each semester and some of the programs include students, staff and local community. For example, each of the kulliyah based societies organized their own kulliyah based events, such as IRKHS Fest, KICT Fest, and more. In these events, many entrepreneurs from outside IIUM were invited to sell their product within the IIUM campus area. Vendors that were involved in the event would need some workers to help them handle the

sale. This creates an opportunity for a temporary job for both IIUM students and local Gombak communities.

The IIUM strategic roadmap under the High-Touch Community Engagement highlights the implementation of IIUM community engagement framework, which are important in creating moderate graduates for the country and the world. Therefore, we believe the IIUM GIGEASE mobile application could be an anchor in building a strong and sustainable partnership with the surrounding Gombak community through interaction and job creation.

1.1. The Rising Cost of Living in Malaysia

According to the 2019 Household Expenditure Survey by the Department of Statistics Malaysia, the average monthly spending per household in the country amounted to RM4,033 (DOSM, 2020, as cited in RinggitPlus, 2020). This figure covers various expenses such as food, housing, transportation, education, and other categories (DOSM, 2020). The Star in 2021 reported that the average cost of living for Malaysian to have a comfortable life is around RM4,000 to RM4,500 a month for a single person. While for a family of four, it is around RM9,000 to RM9,500 a month. This figure is far too big in comparison to the minimum salary, which was set by the government at RM1,500 (MalayMail, 2022). Thus, for the lower income group, they need to sacrifice in many areas as the amount of the salaries can be said as not enough for them to provide a comfortable life for their family. Thus, most of them are finding a second source of income to make ends meet (The Edge, 2022).

For students, this is also a concern as they are usually not having any income to tackle the cost-of-living issue. Many of them are just taking a shortcut by skipping meal or just eating a single dish without vegetables (Utusan Malaysia, 2023). This practices however, will only result to nutritional deficiencies that are needed by their body which might affect their academic performances. The government also admitted these issues and provided Menu Rahmah initiative so that the students can have a proper meal (Berita Harian, 2023). However, this initiative is not enough as students still need money for their education materials, activities and others.

1.2. Gig Economy Platforms and Models

Today, the term of gig economy is more popularised with the establishment of many digital companies such as Uber, Grab, Fiverr, Upwork and more. Gig economy is a labour market where independent contractors and freelancers occupy many temporary and part-time positions rather than full-time, permanent workers (Investopedia, 2022). For the companies who are involved in the gig economy, they usually do not own any assets, as the assets are owned by their customers. For example, Uber is the largest taxi company in the world, but does not have any taxis in their assets, their 'workers' need to provide their own vehicle in order to work for the company.

Other than taxi and delivery services, there are other types of gig economy platforms that are available in the market today, such as Fiverr, it is a global internet marketplace for independent contractors. The platform connects freelancers with individuals or organisations who are seeking people to hire.

1.3. Gig Economy in Malaysia

Gig workers constitute a growing segment of the Malaysian labour force, offering significant potential for employment creation, production, and income generation (Harun, Ali, & Khan, 2020). The sociodemographic profile of gig economy workers in Malaysia, demonstrates high motivation and satisfaction, influenced notably by gender and age. Age and motivation together account for 59.0% of the variance in satisfaction levels (Norwani, Ismail, Nasir, Yusof, & Jamaluddin, 2022).

Despite these positive aspects, gig workers often grapple with job instability, poor job quality, and low salaries, rendering them a vulnerable population susceptible to stress (Freni-Sterrantino, & Salerno, 2021). Recognizing these challenges, there have been widespread calls for the establishment of a regulatory body for the gig economy. In line with this, the Malaysian government has committed to the creation of the Gig Economy Commission Malaysia (SEGiM) (Astro Awani, 2023). This regulatory initiative aims to address the issues faced by gig workers, ensuring fair treatment, stability, and improved working conditions within the gig economy.

1.4. Students in Gig Economy

The gig economy has a significant impact on students, offering flexibility and new opportunities, but also presents challenges such as job satisfaction and stability (Hawari, Rasyidi & Abdillah, 2023). Participation in the gig economy can also promote economic development, provide job opportunities, and support college students in starting their own businesses (Yang, Lin, Huang, Xu, & Du 2018). The digital gig economy could greatly influence Malaysian students' entrepreneurial traits. However, many students are hesitant to pursue entrepreneurship as a career (Hamid, Kurniasari, Taib, Embong, Saheh, Azali, & Sabli, 2018). Specifically, certain aspects of the digital economy, such as the social and cultural environment and the adoption by consumers and businesses, have a significant impact on students' entrepreneurial characteristics (Hamid et al, 2018).

Perceived usefulness, social influence, and students' preparation are significant predictors of their readiness for the gig economy, with perceived usefulness being the dominant factor (Mahmud, Hamil, Ariffin, Pungot, & Hasim, 2023). Students are motivated to participate in the gig economy by the perception of its usefulness, which can lead to skill development, networking opportunities, and increased financial independence. It is crucial for universities to update their curricula to prepare students for the gig economy and provide them with the necessary skills for future employment (Mahmud et al, 2023).

1.5. The Design of Mobile Application for Gig Communities

Mobile applications can significantly improve the efficiency and productivity of NGOs by automating functions, reducing paperwork, and increasing interaction between members in a secure manner. A mobile application can also serve as a platform to connect NGOs with volunteers, allowing for the communication of opportunities and enrolment based on preferences, with gamification elements to increase engagement (Goel, Agarwal, Chandwani, & Dixit, 2021).

Other than that, Pardeshi, Bhogade, Kulkarni, Shigwan, & Mashal (2016) said that Cross-platform mobile applications can enhance collaboration between NGOs

and society, promoting social services, information management, and transparency in operations. Web-based platforms can serve as a hub for NGOs to register, post activities, and engage with prospective members and volunteers, using modern web technologies (Jain, Kathoke, Khobragade, & Deshpande, 2020). These applications can streamline operations, facilitate donations, and connect NGOs with volunteers and the public, ultimately supporting the NGOs' mission and expanding their impact.

In designing job marketplace application, Pavani, Pujitha, Vaishnavi, Neha and Sahithi (2022) have extracted some feature based online job portal. For job poster, they are able to be able to create a new vacancy, change the details for vacancy, search on applicant, reschedule or postpone the interview. For the job seeker, they are able to view all vacancies, view the details of the job poster, view the details of the vacancy and search on vacancies. While Orrù (2020) has also list out some of the essential feature for such application, for the user, essential features include sign-up/login functionality, profile editing, resume uploading, job searches, the ability to email resumes directly, job alert notifications, and the option to save jobs for later. The recruitment panel should offer registration for recruiters, the ability to upload and post jobs or send job invitations, email offers to candidates, filter incoming resumes, provide payment options and membership plan management, and allow for resume downloads (Orrù, 2020).

For the design of the application, Prasetya, Ridwanto, Rahman, and Gunawan (2021) while studying for the impact of e-transport platforms' Gojek and Grab UI/UX design to user preference in Indonesia. They concluded that the UI/UX design is only a minor factor in determining user preference among Indonesian users. They noted that despite Gojek's more complex UI, it is more preferred by users. However, it worth to note that both Gojek and Grab SUS score is relatively close. Zahib, Effendy, and Darwiyanto (2022) while studying the lack of accessibility in the Grab application for visually impaired users. The evaluation results show that the scenario completion rate has increased, and the number of errors made when completing the scenario has also decreased. They concluded that using the UCD method can improve the usability of the application.

1.6. Application Development

Creating a usable application always involves the needs of the user; thus, understanding the user requirements and transforming them into prototypes is essential for the successful development of applications (Susanto, & Meiryani, 2019). Besides, it is crucial to understand the guidelines that are available to ensure a smooth experience for the user when using the application.

Interaction design lifecycle model methodologies are among the methodologies that allow the development of an application to adapt quickly to changing requirements. The interaction designs, for example, will improve human-computer interaction, save time for designers, and allow developers to adopt comprehensive designs for new applications (Barbosa, Chen, Cuzzocrea, Du, Kara, Liu, Sivalingam, Ślęzak, Washio, Yang, Yuan, Prates & Stephanidis, 2020). The primary aim of interaction design is to create products that facilitate users in accomplishing their goals in the most efficient manner possible. There are four basic activities in the interaction design process (Preece, Sharp, & Rogers, 2019), as explained in the next section.

1.7. Significance of The Project

There are several significances to this project, which can be view on table 1:

Table 1: the significance of the project

No.	Significances	Elaboration
1	Economic Empowerment	The project aims to address the financial challenges faced by both students and local B40 communities in the Gombak area. By providing opportunities for temporary jobs and gig work through the IIUM GigEase platform, individuals can supplement their income.
2	Community Development	The project aligns with IIUM's strategic roadmap for High-Touch Community Engagement. By involving local Gombak communities on the platform, it fosters a sense of community and mutual support. It can lead to stronger social bonds and a more cohesive local environment.
3	Skills Development	The project serves as a steppingstone for local communities to familiarize themselves with the Fourth Industrial Revolution (4IR). Through participation in gig work and using the platform, individuals can gain new skills and adapt to the changing job market, potentially opening new career opportunities.
4	Sustainable Campus Economy	By involving outside vendors and businesses in campus events, the project also contributes to the sustainability of the campus economy. It can generate additional revenue for the university and support the local economy.

2. METHODOLOGY

In this study, the principles of Interaction Design were applied to design a user-friendly platform. Interaction design focuses on how users interact with products, particularly software applications or websites, aiming to make user interactions efficient. The interaction design process involves four basic phases: 1) establishing requirements, 2) designing alternatives, 3) prototyping, and 4) evaluating (Preece et al, 2019).

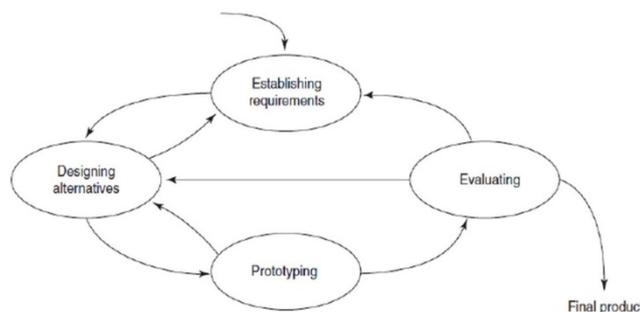


Fig. 1. Interaction Design Lifecycle Model (Rogers, Sharp, and Preece, 2019).

In the first phase, the project focused on identifying key features for the application through a literature review and a quantitative approach. These features

served as the foundation for the subsequent phases. In the second phase, the design of the system's interfaces and architecture was developed, guided by the identified features. Using Adobe XD, low-fidelity prototypes were created to allow rapid iteration based on user feedback. These low-fidelity prototypes, simple and easy to modify, facilitated quick exploration of alternative designs (Preece et al., 2019).

In the third phase, wireframes and prototypes were created to visualize the platform's user interfaces (UI), focusing on layout. The initial designs used low-fidelity prototypes for rapid iteration based on user input. Then, the low-fidelity prototype was transformed into high-fidelity design prototype, providing a more realistic representation of the final product (Preece et al, 2019). The Flutter software was used to design the high-fidelity prototype, supporting multi-platform deployment with a single code base (Nwabude, 2022), aligning well with IIUM GIGASE's multi-platform user base.

The core of this paper focuses on the prototyping process and the subsequent usability testing. After the prototypes were developed, usability testing was conducted to gather user feedback and assess the overall user experience. Based on this feedback, several improvements were made to enhance the application's usability. The next sections will detail the results of the usability testing and the analysis of user performance, highlighting key insights gained during the evaluation process.

2.1. Participant Recruitment

Participants for the usability testing were selected from the platform's target user base which is IIUM students. The Participant were recruited through convenience sampling. Convenience sampling, according to Edgar, Manz in 2017, is a method of collecting samples by selecting those that are conveniently available around a location. Through this, the researcher went to the various kulliyah common area to ask random students to participate in the research

Eleven participants were involved in evaluating both the low-fidelity and high-fidelity prototypes across three iterations. The first iteration, involving the Low-Fidelity Prototype 1, had three female participants which were found on the cafés on The Kulliyah of Education (KOED) and Human Sciences (HS) building. The second iteration, which tested Low-Fidelity Prototype 2, included three participants—two males and one female. These participants were found on HS and the Kulliyah of Engineering (KOE) premise area.

The final iteration tested the High-Fidelity Prototype, with five participants—three males and two females. They were found on Kulliyah of Information and Communication Technology (KICT), HS, and Ahmad Ibrahim Kulliyah of Laws (AIKOL) area. All participants were undergraduate students from the International Islamic University Malaysia (IIUM) Gombak campus, and apart from their education level and gender, no other demographic data were collected.

2.2. Usability Testing Procedures

Upon arrival at the testing location, participants were welcomed by the researcher, who outlined the purpose of the usability evaluation. It was emphasized that the test aimed to assess the usability of the GIGASE platform, not to evaluate the participants themselves. Then, the researcher read the relevant tasks (Table 3).

while the participants completed them one at a time, at their own pace. Participants were asked to verbalize their thoughts as they went along, while the researcher took notes.

The participants' performance is assessed based on time spent, steps taken, and questions asked. A user receives a '✓' if they complete the task easily with minimal steps with or without asking for a simple hint, while an 'X' is given if they appear lost, unsure of what to do, or asking for step to complete the task.

Table 2: Post-Usability Test form (USE questionnaire).

Code	Questions
	Usefulness
Q1	It helps me to be more effective.
Q2	It helps me to be more productive.
Q3	It is useful.
Q4	It gives me more control over the activities in my life.
Q5	It makes the things I want to accomplish easier to get done.
Q6	It saves me time when I use it.
Q7	It meets my needs.
Q8	It does everything I would expect it to do.
	Ease-of-Use
Q9	It is easy to use.
Q10	It is simple to use.
Q11	It is user-friendly.
Q12	It requires the fewest steps possible to accomplish what I want to do with it.
Q13	It is flexible.
Q14	Using it is effortless.
Q15	I can use it without written instructions.
Q16	I did not notice any inconsistencies when I use it.
Q17	Both occasional and regular users would like it.
Q18	I can recover from mistakes quickly and easily.
Q19	I can use it successfully every time.
	Ease of Learning
Q20	I learned to use it quickly.
Q21	It is easy to learn to use it.
Q22	I quickly became skilful with it.

	Satisfaction
Q23	I am satisfied with it.
Q24	I would recommend it to a friend.
Q25	It is fun to use.
Q26	It works the way I want it to work.
Q27	It is wonderful.
Q28	I feel that I need to have it.
Q29	It is pleasant to use.

After completing all the tasks, participants were asked for opinion, and fill out the USE questionnaire (Lund, 2001) through a Google Form as show in Table 2. Finally, participants were thanked and excused.

2.3. Data Analysis

This study proposed a mobile application platform for short term employment opportunities for IIUM students called GIGEASE. The initial prototypes for the user were created and tested through a formal method of Usability Testing. The testing is conducted to identify and eliminate any usability flaws from the earliest stage of prototype design.

The participants' performance were observed while performing the tasks, their such as time spent, steps taken, questions asked, all noted for further analysis. Upon completing the tasks, the participants were asked to give their opinion regarding the prototype and answering the USE Questionnaire through google survey. The survey responses will be used to determine the score of Usability aspect of the application.

3. RESULTS AND DISCUSSION

3.1. Low fidelity Prototype 1

During the testing a total of 16 tasks were given to the participants regarding account registration, job seeking, job poster and e wallet usage. The user finds it quite problematic and often asks the interviewer for hints. The performance of the participants can be viewed at table 3.

Table 3: Tasks and user performance on low fidelity prototype 1 testing

Tasks	P1	P2	P3
Suppose you are a new user interested in using the application. Please create a new account.	/	/	/
Imagine you are a student seeking a temporary job. Please find the list of available job.	/	/	X
Apply for a job that you are interested in. Walk me through the steps you take to complete the application.	/	/	/

Suppose you want to save a job listing to review later. Find a way to bookmark or save this job. Show me how you do it.	/	X	X
You received a notification about an interview request. Please navigate to your messages and respond to the employer.	/	/	/
You want to post a temporary job opportunity. Please create a new job listing.	/	X	X
Set specific preferences for the job, such as visibility options.	/	/	X
Review a transporter job listing you previously created.	X	/	X
Hire any applicant for the job you created.	X	/	/
Imagine you have just received your payment for a job you completed. Please show me how you access your e-wallet within the application and tell me your current balance.	/	/	/
You have decided to withdraw some funds from your e-wallet to your linked bank account. Walk me through the steps to initiate this withdrawal.	/	/	/
You have just received some money and want to add it to your e-wallet. Please show me how you can add funds to your e-wallet.	/	/	/
You are planning to make a payment by scanning the QR code at the shop. Please demonstrate how you initiate and complete a payment.	/	/	/
While paying at the counter, the cashier wants to scan your e-wallet barcode, but the code is too small, please make it larger.	/	/	X
You need to transfer money to a friend who also uses the application's e-wallet. Show me how you would perform this peer-to-peer transfer.	/	/	/
You'd like to review your transaction history to track your previous payments and transfers. Show me how you access your transaction history.	/	/	/

3.2. Participants' Opinion

A total of three main usability issues and three suggestions were discovered from the testing.

Participants found some tasks in the application difficult due to confusing design, information overload and unclear terms for certain functions. They suggested creating separate pages for different job statuses and reducing the need for excessive navigation. Additionally, they recommended adding a new job section for university clubs to recruit new members. Despite these challenges, the study successfully captured users' attention and provided valuable insights for improving

the prototypes. The suggestions received will be considered in the next refinement of the prototypes.

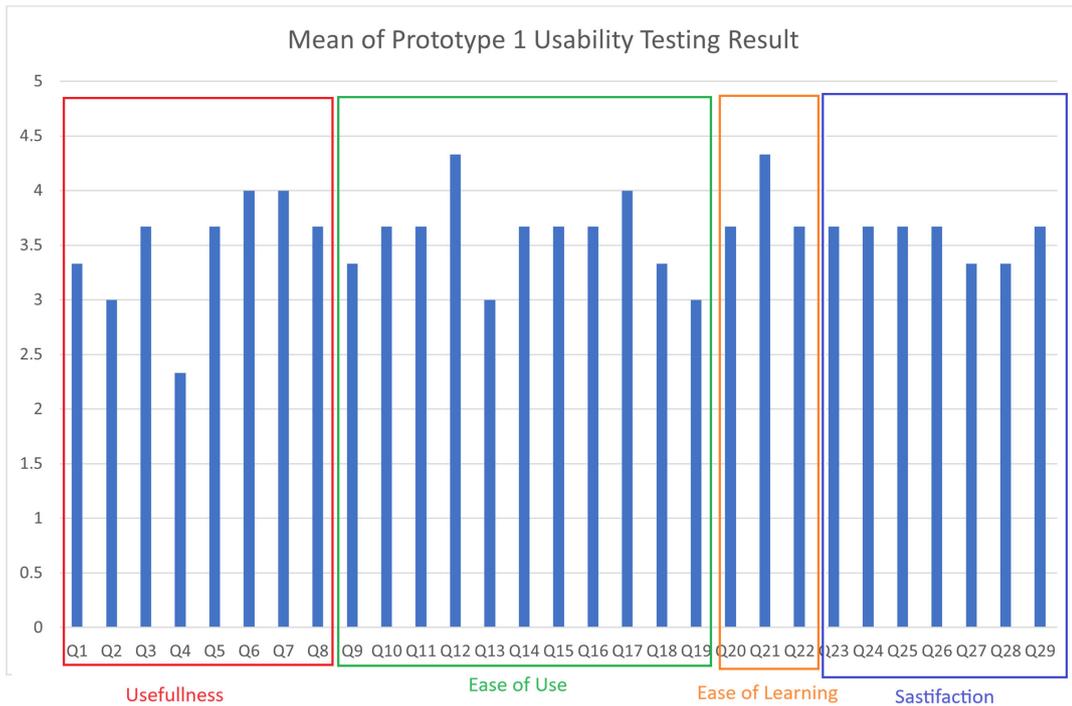


Fig. 2. Mean of Prototype 1 Usability Testing Result.

Fig 2 shows the score range for the USE Questionnaire is from 2.33 to 3.45 for usefulness, 3 to 4.33 for ease of use, 3.67 to 4.33 for ease of learning and 3.33 to 3.67 for satisfaction. Indicating further improvements should be made to the application. Detailed feedback from the participants can be viewed in fig. 3.

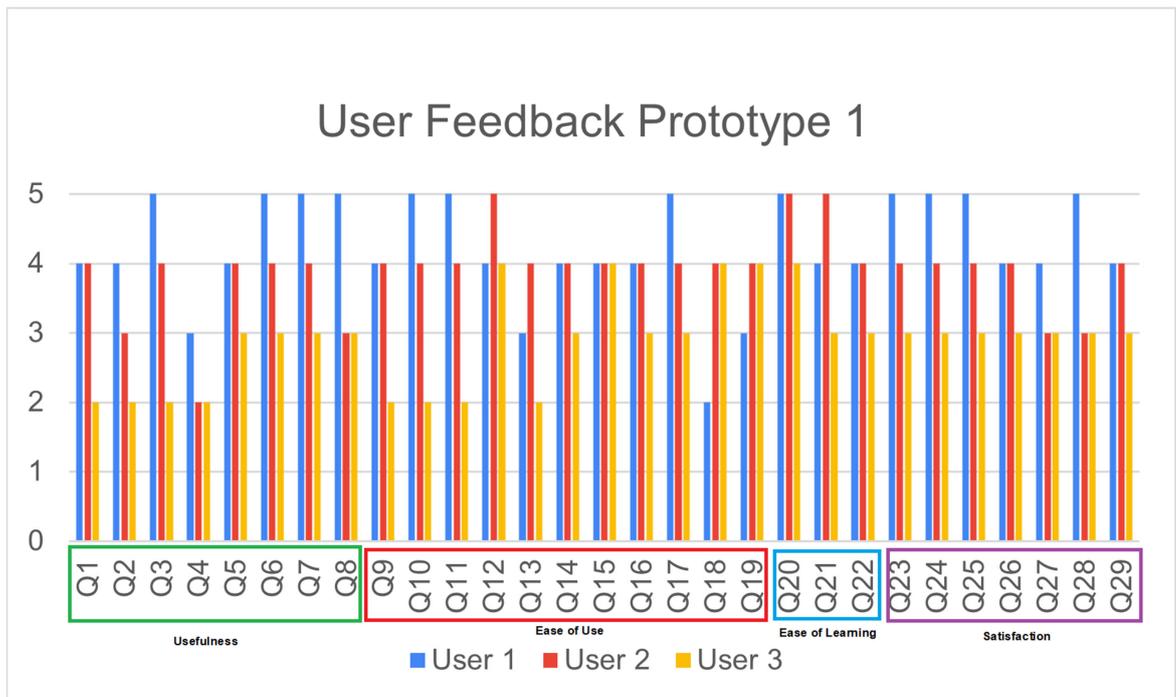


Fig. 3. User Feedback on Prototype 1.

3.3. Low-fidelity Prototype 2

In the testing of Prototype 1, it has been discovered that some users struggled to complete some of the tasks. After refining the prototype based on the users' input, the following (fig. 4) are some examples of changes made from Prototype 1 to Prototype 2.

<p>Prototype 1</p>	<p>Prototype 2</p>	<p>Prototype 1</p>	<p>Prototype 2</p>	<p>Prototype 1</p>	<p>Prototype 2</p>
<p>After the usability testing was finished, the participant suggested that a new section be added to give clubs opportunities to recruit their subcommittees using the application.</p>	<p>A new volunteer job is at the bottom of the main page.</p>	<p>During the testing, the user has difficulty changing the job type. The user also confuses the term 'vendor', which is a type of work that gives the meaning of gig job type. They also suggest making a different window for active, completed, and cancelled jobs.</p>	<p>Both job types will be viewed on the same screen. And the user can view the job according to its status. The term 'gigs' was also added to replace the previously confusing term 'vendor' that was meant as gig job type. 'Saved work' has been transferred here, which previously was on 'More'.</p>	<p>During the testing, the user has difficulty changing the job type. The user also confuses the term 'vendor', which is a type of work that gives the meaning of gig job type. They also suggest making a different window for active, completed, and cancelled jobs.</p>	<p>Both job types will be viewed on the same screen. And the user can view the job according to its status. The term 'gigs' was also added to replace the previously confusing term 'vendor' that was meant as gig job type. 'Saved work' has been transferred here, which previously was on 'More'.</p>

<p>Prototype 1</p>	<p>Prototype 2</p>	<p>Prototype 1</p>	<p>Prototype 2</p>	<p>Prototype 1</p>	<p>Prototype 2</p>
<p>Similar to 'job applied', the user also has difficulty changing the job type. They also confuse the term 'vendor'. They also suggest making a different window for active, completed, and cancelled jobs.</p>	<p>The term 'Gigs' replaced the previously confusing term 'Vendor'. Unlike job history, which does not differentiate the view for each job type, 'Gig job' and 'Transporter', 'Job Posted' will differentiate them to avoid confusion between 'Job Applied' and 'Job Posted'. The different sections for 'active', 'completed', and 'cancel' were made.</p>	<p>While the user was having no problem navigating the 'More' section, one of them was suggesting replacing it with just the profile page, as it would be easier to view their account without too much navigation.</p>	<p>Changing the 'More' screen to 'My' screen. The rating of the user can be viewed here. They can also see how many hours they have been working. The 'Volunteer Posted' has also been put here, so that the user who is eligible to post the 'Volunteer Job' can view their applicants here.</p>	<p>The user is confused with the term 'Vendor', which is a type of work that has the meaning of gig job type. They asked to add a volunteer job section to the application to give clubs opportunities to recruit their subcommittees using the application.</p>	<p>The term 'Gigs' replaces the previously confusing term 'Vendor'. A new volunteer job option was added at the bottom of the 'Add New Job' page.</p>

Fig. 4. The changes made from prototype 1 to prototype 2.

The tasks from the prototype 1 were presented to the participants with a few alterations to include the newly added "volunteer" job type, and only minimal hints were provided. All participants had no trouble navigating the application, indicating a high level of usability. However, one user points out one potential issue on the grid view of the job cards that might be overcrowded with information.

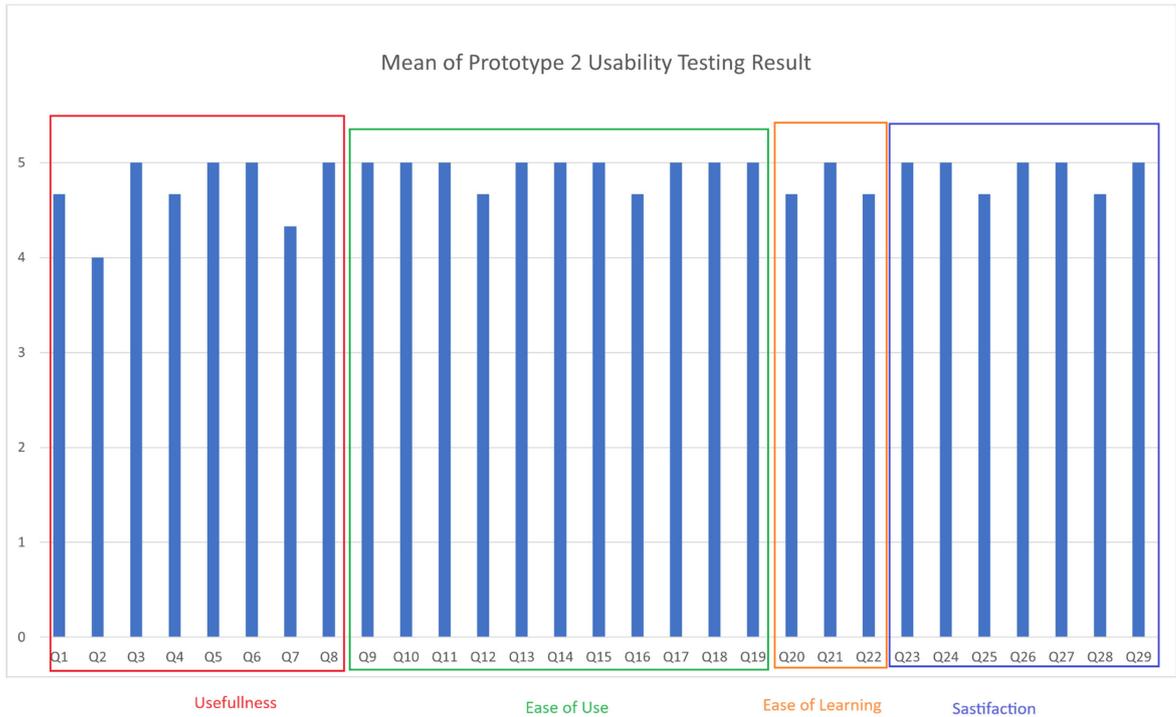


Fig. 5. Mean of Prototype 2 Usability Testing Result.

The score range for the USE Questionnaire is from 4 to 5 for usefulness, 4.67 to 5 for ease of use, 4.67 to 5 for ease of learning and 4.67 to 5 for satisfaction.

Table 4: the overall mean score for each aspect of USE (prototype 2)

Aspect	Mean Score
Usefulness	4.67
Ease of Use	4.89
Ease of Learning	4.89
Satisfaction	4.93

The overall mean scores from the USE questionnaire indicate that users rated the application highly in terms of usefulness (4.67), ease of use (4.89), ease of learning (4.89), and satisfaction (4.93). These scores suggest that the application was well-received and met or exceeded user expectations in these key areas. In the interview, one user points out one potential issue on the grid view of the job cards that might be overcrowded with information. Detailed feedback from the participants can be viewed in fig. 6.

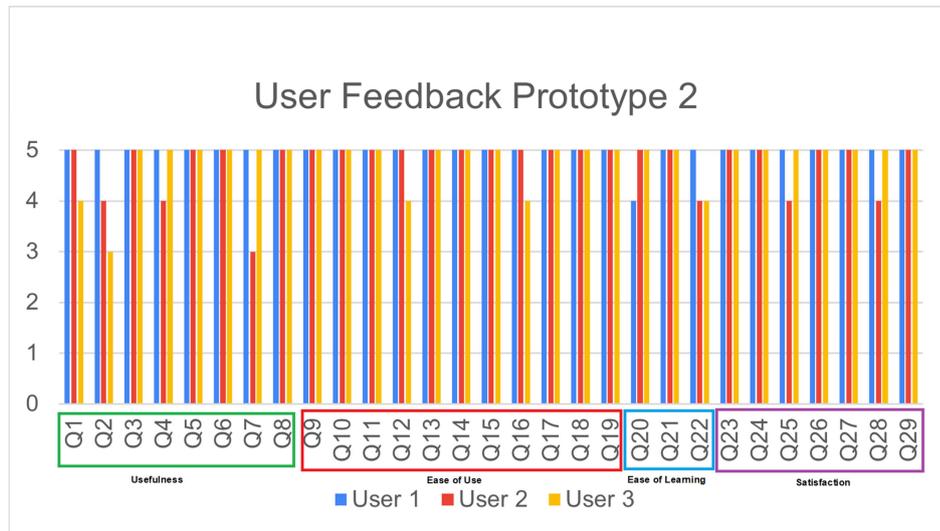


Fig. 6. User Feedback on Prototype 2.

3.4. Prototype 3 (High Fidelity Prototype)

In the Prototype 2 testing, most of the users were able to complete the tasks given with no problem. Thus, the prototype was transformed to high fidelity prototype with one alteration based on the participant suggestion. For the third prototype, the researcher has decided to include prayer time to the application to add some Islamic element to the application. The following (fig. 7) is the change made in prototype 3 based on prototype 2 usability test feedback.

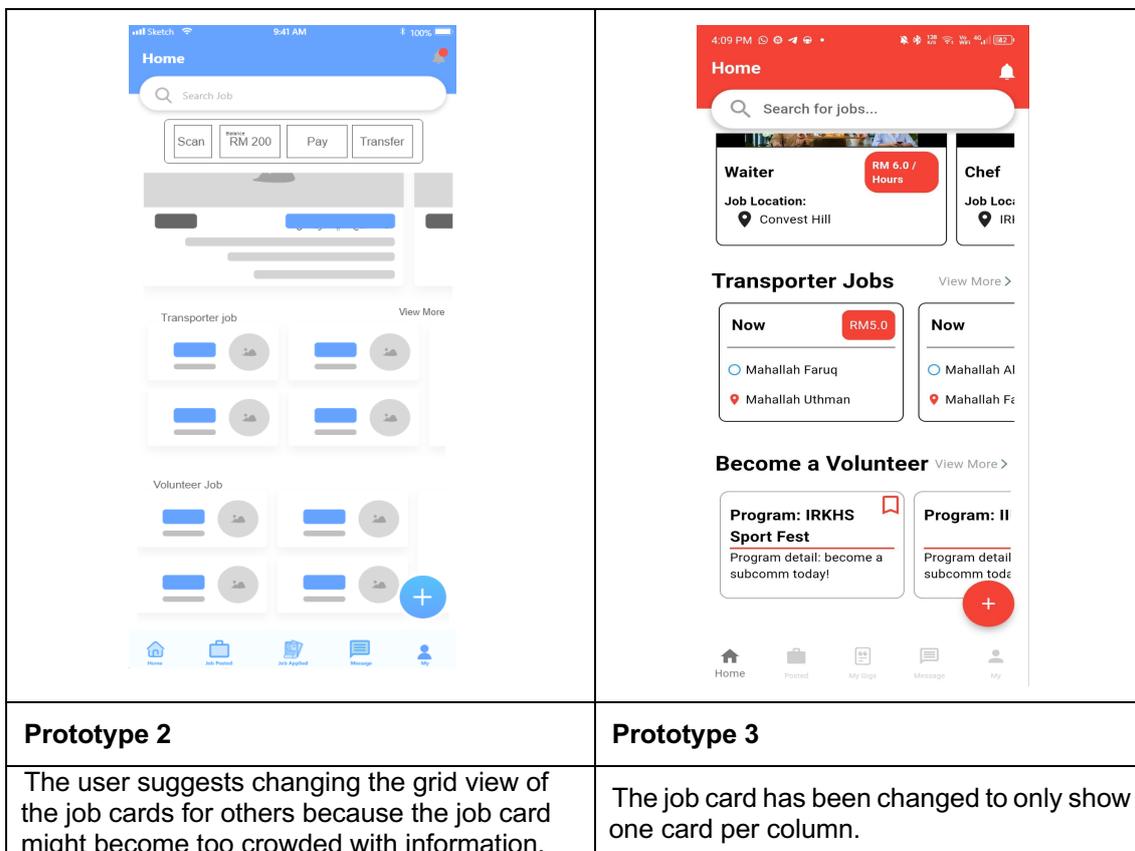


Fig. 7. The changes made from prototype 2 to prototype 3.

The user suggests changing the grid view of the job cards for others because the job card might become too crowded with information. The job card has been changed to only show one card per column.

Table 5: Tasks and user performance on high fidelity prototype 3 testing

Task	R1	R2	R3	R4	R5
Create a new account as a new user	/	/	/	/	/
Find the list of available jobs as a student	/	/	/	/	/
Apply for a job and walk through the application steps	/	/	/	/	/
Bookmark or save a job listing	/	/	/	/	X
Withdraw from the job you applied for	/	/	/	/	X
Respond to an interview request notification	/	/	/	/	/
Create a new job listing for a temporary job	/	/	/	/	/
Review a previously created job listing	/	/	/	/	X
Hire an applicant for the job you created	/	/	/	/	X
Cancel a transporter job you created	/	/	/	/	/
Browse current listings in the volunteer section	/	/	/	/	/
Apply for a volunteer position and detail the submission steps	/	/	/	/	/
Respond to a message regarding a volunteer opportunity	/	/	/	/	/
Create a new volunteer listing for your society	/	/	/	/	/
Find prayer times in the app for Salah	/	/	/	/	/
Access your e-wallet and check the current balance	/	/	/	/	/
Withdraw funds from your e-wallet to your linked bank account	/	/	/	/	/
Add money to your e-wallet	/	/	/	/	/
Initiate and complete a payment by scanning a QR code	/	/	/	/	/
Make the e-wallet barcode larger for scanning	/	/	X	/	/
Perform a peer-to-peer transfer to a friend	/	/	/	/	/
Access your transaction history	/	/	/	/	/

For prototype 3, the number of participants was increased to 5 to ensure more significant results. Tasks from the previous prototype were presented with minimal alterations. Like the previous testing, almost all participants navigated the

application without trouble. However, one user had trouble using the application, which indicated an area of improvement for the applications. The detailed feedback from the participants for the USE Questionnaire can be viewed in fig. 8.

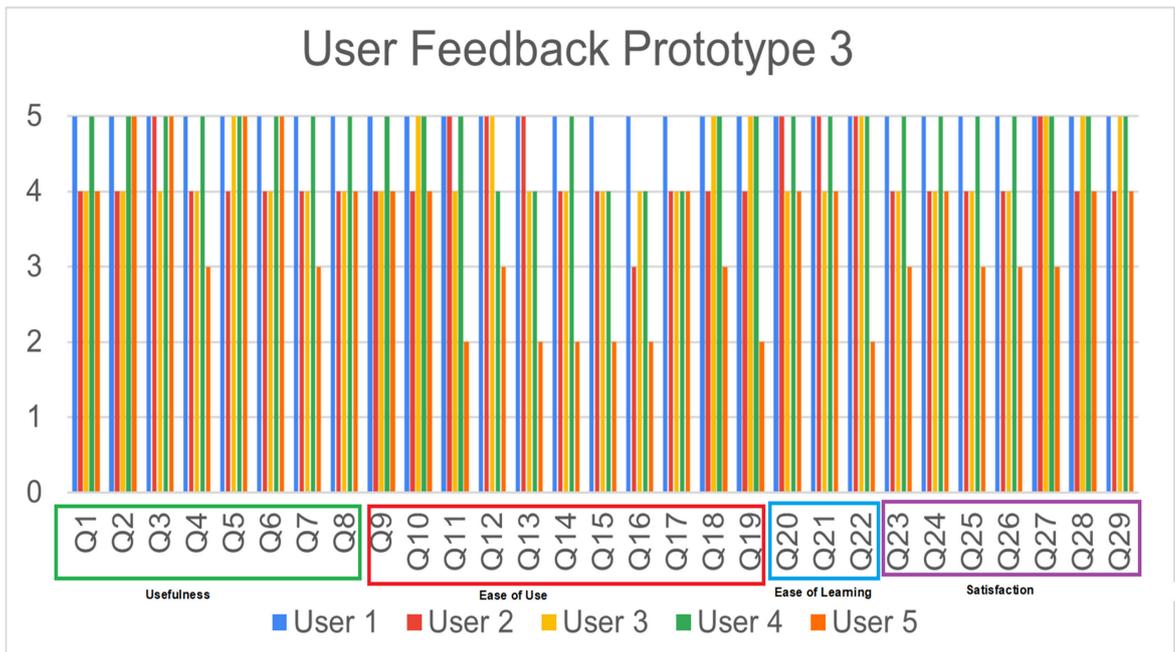


Fig. 8. User Feedback on Prototype 3.

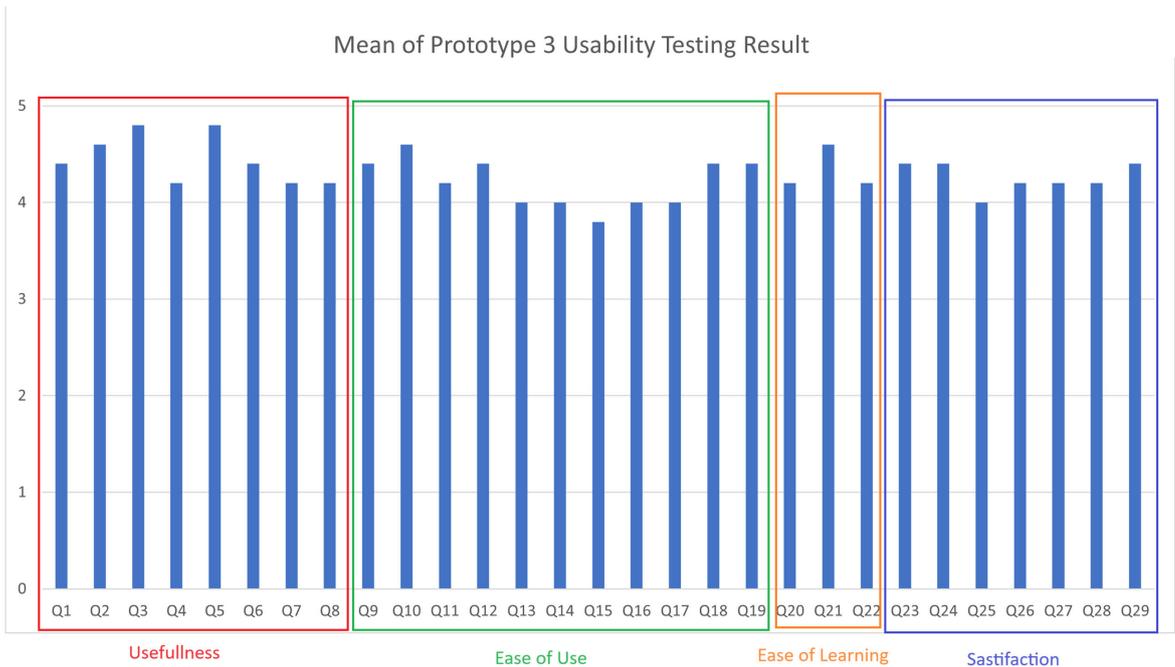


Fig. 9. Mean of Prototype Three Usability Testing Result.

Fig 9 shows the score range for the USE Questionnaire is from 4.2 to 4.8 for usefulness, 3.8 to 4.4 for ease of use, 4.2 to 4.6 for ease of learning and 4 to 4.6 for satisfaction. Indicating further improvements should be made to the application.

Table 6: the overall mean score for each aspect of USE (prototype 3)

Aspect	Mean Score
Usefulness	4.4
Ease of Use	4.4
Ease of Learning	4.4
Satisfaction	4.2

The overall mean scores from the USE questionnaire indicate that users rated the application very highly in terms of usefulness (4.4), ease of use (4.4), ease of learning (4.4), and satisfaction (4.2). These scores suggest that the application was well-received by most of the users.

3.5. Summary

The usability testing of the IIUM GigEase application across three prototypes has demonstrated significant improvements and provided valuable insights into the usability of the platform. Each iteration was carefully evaluated, and user feedback was instrumental in guiding essential modifications to enhance the application’s overall usability, functionality, and design.

Table 7: Summary on each prototypes usability testing

Prototype	Participants	Key Changes	Detail
Prototype 1	3	Initial design and core functionalities.	Initial feedback indicated navigation and task completion challenges. I.e.confusing usage of term, information overload and confusing design.
Prototype 2	3	Improved navigation, added task functionalities, enhanced job listing interface, new e-wallet features.	Improved navigation and task completion. Higher satisfaction and ease of use.
Prototype 3	5	Further refinements, new features like prayer time, enhanced job card display	Positive reception with minor variability in feedback. Further areas for enhancement identified.

Table 8: Finding based on usability testing results

Key Findings	Details
Improvement Across Prototypes	Each prototype iteration showed significant improvements based on user feedback. The mean scores for all usability aspects (usefulness, ease of use, ease of learning, and satisfaction) increased progressively.
User Satisfaction Areas for	Users consistently rated the application highly, indicating a positive reception and a strong potential for meeting user needs effectively. Despite high ratings, some variability in user feedback, particularly

Enhancement	in the third prototype, suggests ongoing opportunities for refining specific features and functionalities.
Interaction Design	The iterative process underscored the importance of interaction design, with each round of testing providing crucial insights for enhancing the application.

The findings from the usability testing indicate significant improvements across the three prototypes, with progressively higher mean scores for usefulness, ease of use, ease of learning, and satisfaction. Consistently high user ratings reflect a positive reception, showing that the application effectively meets user needs. However, some variability in feedback for the third prototype suggests ongoing opportunities for refinement. Overall, the interaction design process proved essential for enhancing the application's functionality and user experience.

4. CONCLUSION

In conclusion, it appeared that the correct usage of terms and clear navigation design were most important for the GIGEASE application's usability. These factors were highlighted through user testing and feedback, indicating that further refinement in these areas is crucial for enhancing the overall user experience. The prototype 1 revealed key usability issues that were addressed in subsequent iterations, resulting in high usability scores in the next two prototypes. The development of this platform has the potential to benefit both the students and the local B40 communities in the neighbourhood of the Gombak campus. The application will address the financial issues of both targeted users.

Future work will include the full development and deployment phases. Which will also facilitate the assessment of acceptance and usage patterns among the university and neighbouring communities.

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