JOURNAL OF DIGITAL SYSTEM DEVELOPMENT

https://e-journal.uum.edu.my/index.php/jdsd

How to cite this article:
Noor Izzah Binti Yahya & Wei, L.Z. (2024). A Design of Mobile Application Repository for Malaysian Herbs. *Journal of Digital System Developments*, 2(1), 74-86. https://doi.org/10.32890/jdsd2024.2.1.5

A DESIGN OF MOBILE APPLICATION REPOSITORY FOR MALAYSIAN HERBS

[1]Noor Izzah Binti Yahya & [2]Lim Zhun Wei
Universiti Utara Malaysia, Malaysia

[1]Corresponding author: izzah@uum.edu.my

Received: 19/9/2023 Revised: 24/9/2023 Accepted: 26/03/2024 Published: 30/4/2024

ABSTRACT

This paper describes Repository for Malaysia Herbs, a mobile application system used to view information on Malaysian herbs and make purchases through this platform. This project aims to develop a mobile application that provides information to everyone interested in Malaysian spices. The methodology used in this project is known as the Agile method, which involves six phases: planning, designing, developing, testing, reviewing, and launching. Besides, this project will increase people's knowledge about and expand Malaysian herbs abroad. In conclusion, this project has successfully developed with all the basic features which allows user to search and understand the herbs' information and purchase it through this platform.

Keywords: Herbs, repository, mobile online shopping.

INTRODUCTION

In this age of globalisation, there are many places to shop online, such as Shopee, Lazada, and Amazon. All these websites or platforms have everything people need in their daily lives. People can search for anything and find it, and there are many sellers on all of them. So, this could make it hard for people to know if the goods are tangible or if they can trust the sellers. There are also a lot of mobile health apps like MyChart (Epic System Corporation, 2023), GoodRx: Prescription Coupons (GoodRx, 2023), Healthy Benefits (Solutran, Inc., 2023)

A report on DigitalFren (2022) says that the average person checks their phone daily for 4 hours and 23 minutes. However, as mobile apps become more famous, their use time is expected to rise by 4 hours and 35 minutes by 2023, which is twice as much as in 2022. Also, a smartphone junkie checks their

phone screen between 262 and 250 times a day, which takes less than 5 minutes. According to a report from the Department of Statistics in Malaysia in 2021, 98% of Internet users spent most of their time on social networks in 2020. This is followed by downloading photos, pictures, videos, or music, playing or downloading games (87.9%), finding out about goods and services (85.4%) and downloading software or programs (78.2%) (Mohd Uzir Mahidin, 2021). So, this study will focus on mobile applications or websites that store Malaysian herbs where everyone can find the herbs used to treat their disease. This study is critical because it will help make a professional database of Malaysian herbs that anyone can use without worry.

At the end of this study, we might find that this site is essential and valuable for people to look for and find the right herbs for their illness so they can buy them and get better quickly. So, this mobile app will have a database of all the herbs available in Malaysia so that people who live there can find the spices and the sellers who have them. Also, this mobile app will have experts who know a lot about Malaysian herbs. They will give information about each herb and watch and clear the seller before they can sell herbs through this mobile app. So, this mobile app will be an excellent place to store information about herbs from Malaysia.

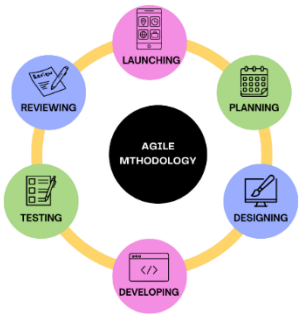
Many shopping platforms are available in Malaysia, but none specialise in repositories for Malaysian herbs. All these mobile applications are regular online shopping platforms for everyone to use. It may take some time for people to search for the herbs they want on all these platforms. Besides, a few mobile applications are used to identify herb leaves on the market. However, none of the media allows people to buy the herbs in the application, such as HerbList (National Library of Medicine at NIH, 2022) and Herbs (Memorial Sloan Kettering Cancer Center, 2023). Some people need a professional platform to search for certain herbs they are looking for. They may need to understand the function and uses of the spices based on professional opinion. They must also purchase all these herbs from trustworthy sellers or suppliers through a platform. Herbs are plants with beautiful or pleasant-smelling parts that have been used in the past and are still used today. Herbs' leaves are used for many things in daily life, such as treating health problems, improving health, cooking, and doing other things. (Nabilah et al., 2020).

METHODOLOGY

The Agile method for making mobile apps is being used in this project to give it direction. The repetitive and step-by-step nature of the agile mobile application development method makes it the best way to make mobile apps. The agile approach breaks up the whole application development process cycle into smaller parts called "sprints" by the agile method. During this part of the sprint, the work process is looked at to ensure there are not too many steps that do the same thing and to lower the chance that one of the other parts of the task will not work as planned. In the Agile technique, each sprint iteration comprises six stages: planning, designing, developing, testing, reviewing, and presenting the product. This way was chosen because it can be changed quickly and puts the user experience first. The Agile method can be adjusted to meet different needs for the growth of projects because it is flexible. So, it can lower the risk because the changes can help improve the planned project without affecting the previous sprints. The user can also ask for any features not already in the suggested system to be added. Priority is given to user satisfaction by using the agile method and delivering the planned project in many stages. During the early stages of developing the suggested system prototype, the user is offered the chance to evaluate the system and give feedback on the prototype. This can improve the quality of the proposed plan because there is a testing part at the end of each sprint.

Figure 1

Phases Involved in Developing Herbs Repository



Planning Phase

During the first step, "planning," a topic called "Mobile Application Repository for Malaysia Herbs" was chosen. After the case has been selected, the problem statements will be examined, and some essential planning will be done by setting up the schedule for each step.

Designing Phase

After that, the system's functions and the user interface for all kinds of users were made during this time. At this stage, a plan, flow chart model, and prototype were made based on the project's needs, such as how it should work for users, sellers, and experts. Both low-fidelity and high-fidelity samples were produced as in the prototype. The Figma platform was used to make this prototype.

Developing Phase

Since the mobile app will be made during this step, it is crucial to create a mobile app. During the development of the suggested system, coding was the focus. The Dart computer programming language was used for front-end coding, and PHP was used for back-end coding. This coding was done using Visual Studio Code, and the system was simulated on a virtual device using Android Studio. Before making the app available to the public, this was done to ensure it works well. The suggested system was built since the sketch was made in the step before this one.

Testing Phase

The testing method lets the creator find out if the system meets the needs of this project if it works correctly, and if there are any bugs. Each sprint will go through the testing step. Software application and usability testing are the two parts of the testing step. Software application testing is a way to check how well a software application works, see if it meets the standards, and if there are any problems with the whole system. This checking is done to ensure there are no bugs in the code or syntax of the planned scheme. Software application testing uses three types of testing: functional testing, integration testing, and system testing. Functional testing is software testing in which the system is compared to the applicable criteria. After software application testing has been done on the system, usability testing is done. Usability testing is done to see if the suggested system meets the requirements to the point where it can be used. Usability testing uses two types of testing: alpha testing and beta testing. Alpha testing, also called "fake client testing," involves trying the system with data from a local database expected to come from an actual client. During initial testing, the system is judged based on accurate data from an actual database. The app's beta version will be given to a small group of people to get accurate data for beta testing.

Reviewing Phase

After the testing, there is a phase called "reviewing." During this phase, the prototype that has been tested is given to possible system users to get their opinions and ideas about the prototype. Google Forms will be used during this part to ask people what they think about this mobile app. Later, notes and pictures can be added to the system to improve it.

Launching Phase

After all the work on the system is done and the supervisor gives it the green light, the start phase can begin. After each sprint, when the system has been successfully launched, the new version is added to this step. This must be done before the next sprint starts to ensure the system works well.

FINDINGS AND DISCUSSIONS

This mobile application has been successfully developed with all the basic features and can be run without error. Once users open the application, they must log in with their registered email and password. Below are figures for each user side and an explanation about the user.

Figure 3

Interfaces of Customer Side

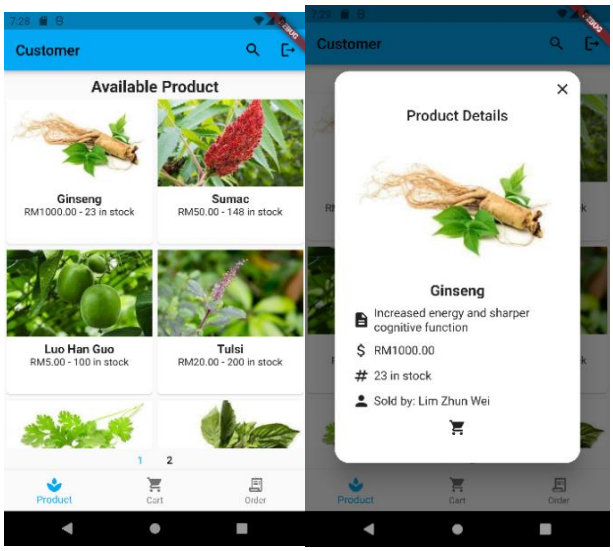


Figure 3 shows the main features of this mobile application, which is an herb repository for checking the function of certain Malaysian herbs. An authorised seller provided the description, and customers may purchase directly from this platform, an extra feature for this project.

Figure 4

Interfaces of Seller Side

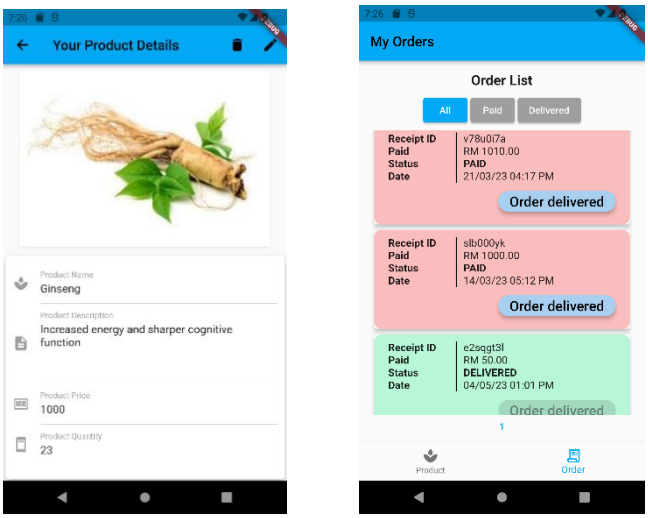


Figure 4 shows what can be done as a seller in this mobile application: the seller must constantly update the herbs owned by them and provide an accurate description of the function of that herb. Besides, the sellers must also handle all the orders by delivering them to customers as they simultaneously sell the herbs on this platform.

Figure 5

Interfaces of Expert Side

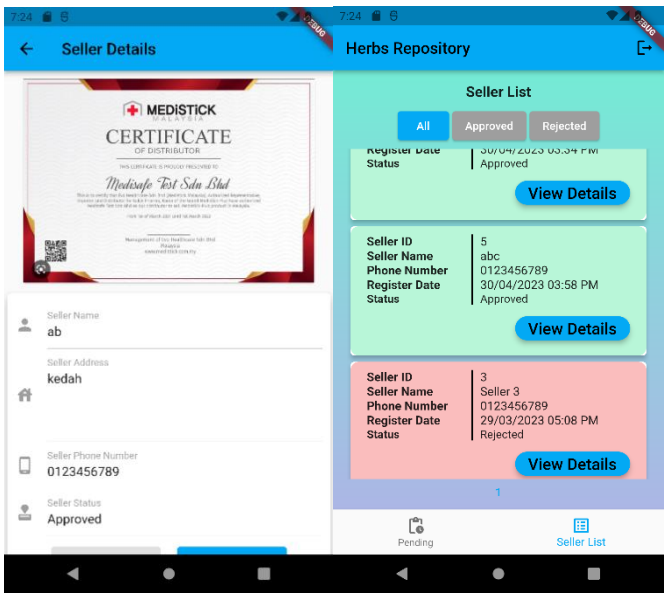


Figure 5 shows the responsibility of an expert in this system. The experts were approved from the backend, and only authorised experts could log into this system to view all the sellers' information. Experts were responsible for viewing all the sellers' registration applications so that only sellers with

official documents could be approved to use this platform. Experts can check all the seller's information and deny their identity in this system anytime. A usability evaluation was conducted on 30 respondents. User testing was conducted to get feedback and suggestions on the system. There are two ways that user testing has been done, including face-to-face briefings and YouTube demonstration videos. Then, respondents must answer the questionnaire through Google Forms. Each section's data was analysed and put into a graph, which was collected based on the chart.

Demographic

The analysis of the respondents' demographics shows that most respondents were male, 60% (18), and 40% (12) were female. Furthermore, Table 1 shows that 66.7% of the respondents (20) are aged between 21 and 40, followed by 41 years old and above, 33.3% (10 respondents). The demographics of respondents are shown in Table 1.

Table 1

The Demographic of Respondents

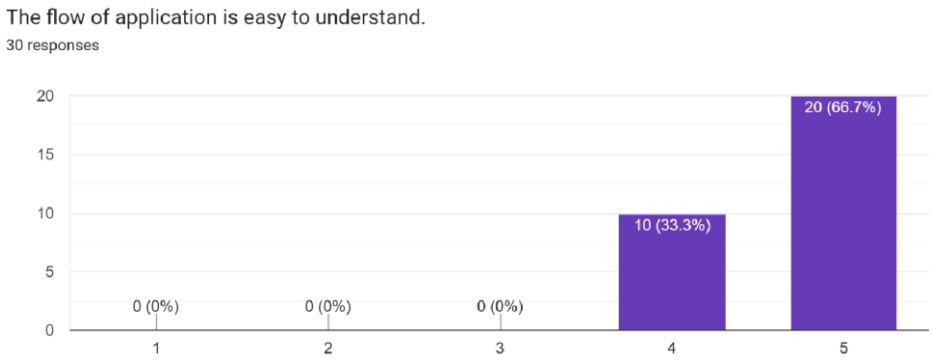
Demographic data	Total number (n = 30)	Percentage (%)
Gender		
Male	18	60.0
Female	12	40.0
Age		
20 and below	0	0
21 – 40	20	66.7
41 and above	10	33.3

Usability Testing

In this section, respondents will be asked about the usability of this application.

Figure 6

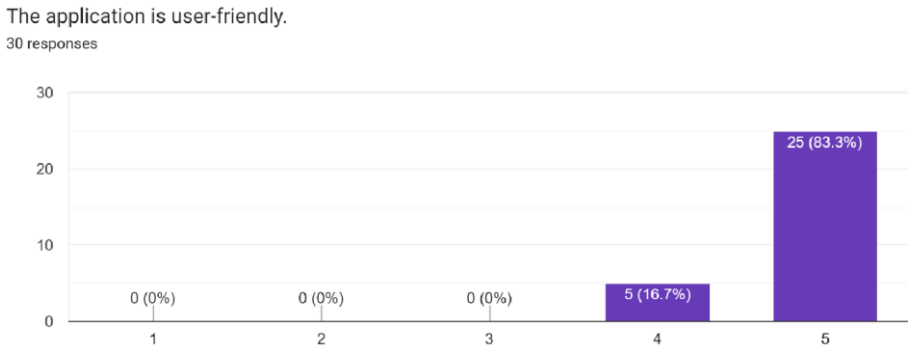
The Flow of the Application Is Easy to Understand



Based on Figure 6, 10 respondents (33.3%) agree that the application's flow is easy to understand. Besides, 20 respondents (66.7%) strongly agree. No respondents strongly disagree, disagree, or feel neutral about the application's flow, which is easy to understand.

Figure 7

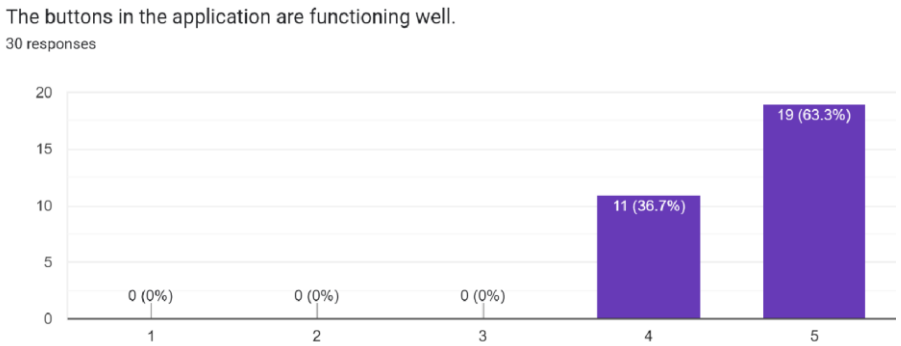
The Application is User-friendly



According to the questionnaire result shown in Figure 7, 25 respondents (83.3%) strongly agree that this application is user-friendly. Five other respondents (16.7%) agreed that the application design is user-friendly for all users. None of the respondents feel neutral, disagree, and strongly disagree that the application is user-friendly.

Figure 8

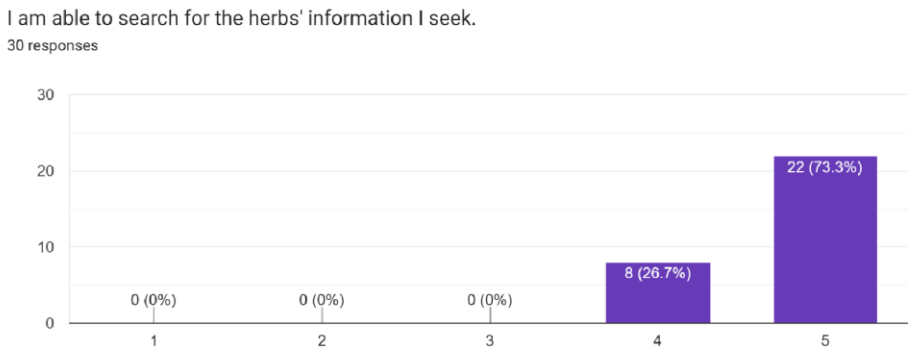
The Buttons in the Application Are Functioning Well



According to Figure 8, 11 respondents (36.7%) agree that the application's buttons function well. Moreover, 19 respondents (63.3%) strongly agree that the buttons have worked properly. No respondents feel neutral, disagree, or strongly disagree that the buttons function well.

Figure 9

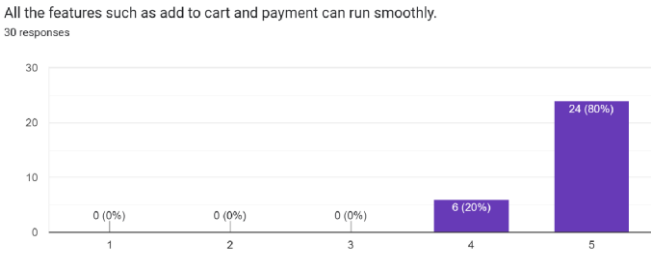
I am Able to Search for the Information I Seek About Herbs



Of 73.3% of the 30 respondents, 22 strongly agree that they can search for the herbs and information they seek. The number of respondents who decided that they could explore the information on herbs was eight (26.7%). No respondent feels neutral, disagrees, or strongly agrees about how they can search for the information they are looking for in herbs.

Figure 10

All the Features, Such As Add to Cart and Payment, Can Run Smoothly



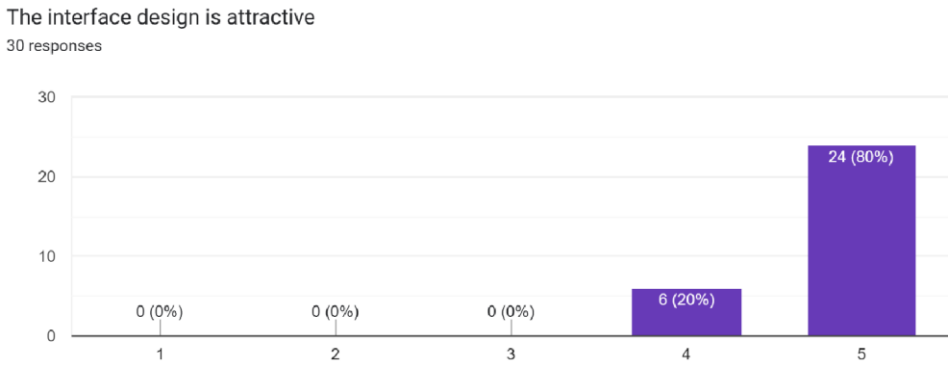
As shown in Figure 10, there are 24 respondents, and 80% of 30 respondents strongly agree that all the features, such as add to cart and payment, can run smoothly. Only six respondents (20%) agree that all the features can run smoothly. None of the respondents feel neutral, disagree, or strongly disagree about all the features that can run smoothly, such as adding to cart and payment.

System Design

This section has three questions that will ask respondents about their opinions on the system design of this application.

Figure 11

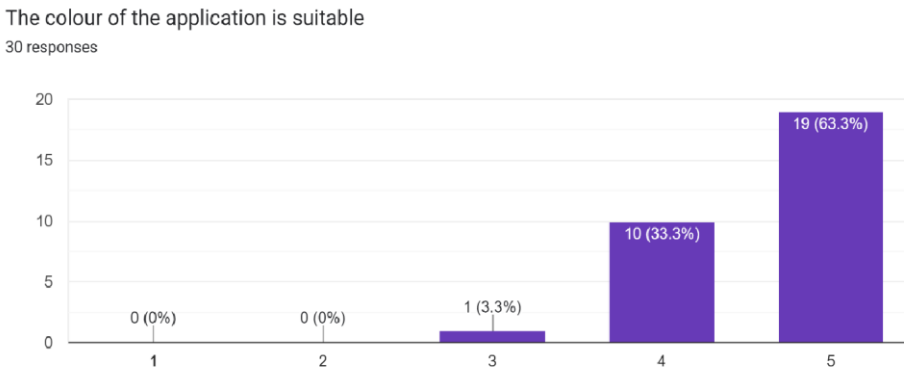
The Interface Design is Attractive



The options that strongly agree that the interface design is attractive have been voted by the most respondents, which is 24 respondents from a total of 50 respondents (80%). Furthermore, the second highest option that the respondents voted on is agreeing that the interface is attractive, containing six respondents (20%). None of the respondents voted that they feel neutral, disagree, and strongly disagree that the interface design is attractive.

Figure 12

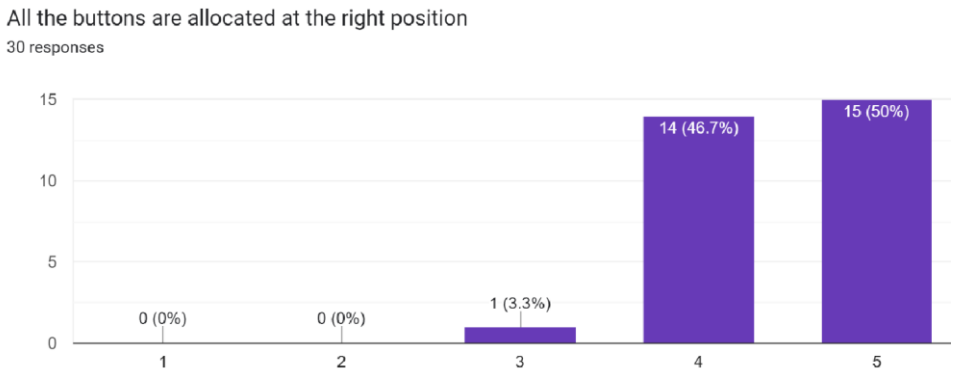
The Colour of the Application is Suitable



From the result shown in Figure 12, I can conclude that most respondents strongly agree that the application's colour suits 19 respondents (63.3%). Besides, 1- respondents (33.3%) agree that the application's colour suits this system. One respondent (3.3%) feels neutral that the colour is correct, while none disagree and strongly disagree that the colour is ideal for this application.

Figure 13

All the Buttons Are Allocated at the Correct Position



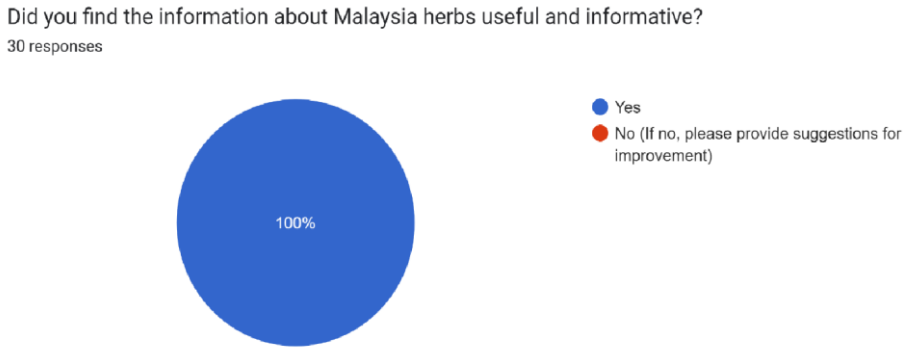
According to the results, 15 respondents (50%), half of the total respondents, strongly agree that all the buttons are allocated in the correct position. The second highest number of respondents who agree is 14 respondents (46.7%) who feel that all the buttons are allocated in a suitable position. Only one respondent feels neutral that all the buttons are given in the right place. None of the respondents disagree and strongly disagree that all the controls are shown in the correct position.

User Evaluation

This section evaluates three user opinions. It contains three questions about customer, seller, and expert.

Figure 14

Did you Find the Information about Malaysian Herbs Valuable and Informative?



Based on the result, 100% of the respondents, which means 30 respondents, agree that they find the information about Malaysian herbs valuable and informative. No respondents disagree with this and provide any suggestions for improvement.

Figure 15

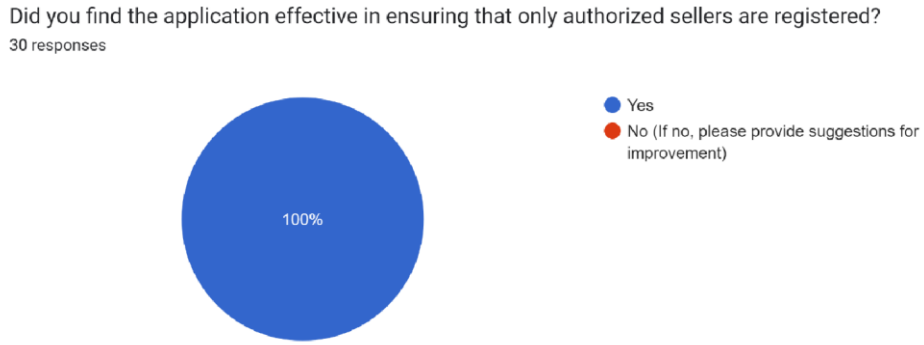
Were you Able to Upload and Manage Your Products Effectively?



Based on the questionnaire's results, 30 respondents (100%) agree they can upload and manage their product effectively. This means all the features are functioning well. No respondents found any errors or challenges that they had faced.

Figure 16

Did you Find the Application Effective in Ensuring that Only Authorised Sellers Are Registered?



It can be concluded that there are 30 respondents, meaning 100% of the total respondents agree that this application effectively ensures that only authorised sellers are registered. There are no respondents who disagree with this and provide any suggestions for improvement.

Feedback and Suggestions

This is the feedback and suggestions section. This section aims to improve the system based on users' suggestions during user testing. Table 2 shows the feedback and suggestions by respondents during user testing.

Table 2

Feedback and Suggestions

Feedback and suggestion
The colour of the application may change to a more colourful scheme.
This application is very informative.
This application is helpful and very informative for older people.
This application design is user-friendly.
It can have some filters, such as category.
The application icons may have different colours or designs for another user.

Users will also state the bugs or errors in this section when they find any bugs during the testing phase. Table 3 illustrates the bugs and errors provided by respondents.

Table 3

Bugs and Errors

Bugs and errors
The user cannot edit the password.
What if the user forgets their password and then cannot retrieve his password
The login screen is not designed for landscape.
The user cannot edit the profile.
Maybe customers can directly add a certain quantity of products to the cart.

Based on the feedback on the bugs and errors, I have categorised them into three categories: irrelevant, improvement, and future improvement. The login screen has a bug that is not relevant; the forgot password feature, change colourful scheme, and change application icon are under revision while adding the filter feature adding specific quantities, and the profile page is under further improvement.

CONCLUSION

In conclusion, this project was completed based on the requirements. However, there are some limitations to the improvement that cannot be made due to lack of time. Based on the feedback collected, three more functions will be added in future work: the filter feature, add specific quantity and the profile page. Besides that, this application can be launched and used by everyone to get information on Malaysian herbs. The function is done and can run smoothly, from searching for herbs to making payments.

For future work to complete this system, users can search with filter features, such as filters based on herbs' functions or price ranges. Next, customers can directly add specific quantities of herbs to the cart so they do not have to set the amount again after they have been added. The last feature that must be done is that users may manage their profile in the application by editing their name, address, and password.

ACKNOWLEDGMENT

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

REFERENCES

Ahmad, N., N. Abdella, A., Abdul Hamid, R., Sidek, R., & Affendy Omardin, M. (2011, July). An empirical study on medicinal herbs information system (MHIS) in Malaysia. *African journal of business management, 5*, 5292–5296.

Epic System Corporation (2023). MyChart by Epic System Corporation (Version 10.6.1) [Mobile app]. Play Store. https://play.google.com/store/apps/details?id=epic.mychart.android&hl=en&gl=US

GoodRx (2023). Prescription Coupons by GoodRx (Version 7.27.0) [Mobile app]. Play Store. https://play.google.com/store/apps/details?id=com.goodrx&hl=en_US

Memorial Sloan Kettering Cancer Center (2023). About Herbs by Memorial Sloan Kettering Cancer Center (Version 1.14) [Mobile app]. Play Store. https://play.google.com/store/apps/details?id=org.mskcc.AboutHerbs&hl=en&gl=US

Digitalfren (2022, October 3). *Mobile App Usage and Growth Statistics for 2023 and Beyond.* Retrieved from https://digitalfren.com/mobile-app-usage-and-growth-statistics-for-2023-and-beyond/

Mohd Uzir Mahidin (2021, April 12). *ICT Use and Access by Individuals and Households Survey Report, Malaysia, 2020. Department of Statistics Malaysia Official Portal.* Retrieved from https://www.dosm.gov.my/v1/index.php?r=column%2FcthemeByCat&cat=395&bul_id=OWUvVnV5SHI2WFU2VFhnQ2ZjTm1Bdz09&menu_id=amVoWU54UTl0a21NWmdhMjFMMWcyZz09

Muneer, A., & Fati, S. M. (2020). Efficient and Automated Herbs Classification Approach Based on Shape and Texture Features Using Deep Learning. *IEEE Access, 8*, 196747–196764.

Nabilah, N., Abu Mangshor, N. N., Al, M., Abdul Rahman, A., Sabri, B., Ibrahim, S., Ibrahim, Z., & Amilah, A. (2020). "My herbs": A mobile-based application for herbal leaf recognition using Sift. *GADING Journal of Science and Technology, 3*(2), 187-196.

National Library of Medicine at NIH (2022). HerbList by National Library of Medicine at NIH (Version 2.0.0) [Mobile app]. Play Store. https://play.google.com/store/apps/details?id=com.nccih.herbsataglance&hl=en&gl=US

Ogirima S.A.O. (2012). Web-based decision support system for prescription in Herbal Medicine. *Transnational Journal of Science and Technology, 2*(1), 17-22

Ogirima Sanni A.O., Olabiyisi Stephen O, Omidiora Elijah O, & Fagbola Temitayo, M. (2013). Mobile-oriented system for prescription in Herbal Medicine. *International Journal of Scientific and Engineering Research, 4*, 1-10.

Solutran, Inc. (2023). Healthy Benefits by Solutran Inc (Version 3.0.172) [Mobile app]. Play Store. https://play.google.com/store/apps/details?id=com.solutran.otc&hl=en_US