

Jiranku: An Online Neighborhood Application

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Abstract—Sungai Petani (SP) residents is a close-knit community. The current ways for the residents connected had many disadvantages which become more apparent during COVID-19. The purpose of creating the Jiranku: An Online Neighborhood platform is to help the Sungai Petani residents to pass through the difficulties due to the pandemic. The neighborhood platform is a mobile application which provides a platform for the neighbors to know each other and help each other. It also collects the local services provided in a certain area and provides a platform for the locals to access the services easily. It also updates the latest local news happening inside the area like robbery, fires or even COVID-19 cases in the area. From the existing system used, we found there are too many flaws which make the system fail to fit well with the Malaysian. A neighborhood platform is suggested to solve the problems. The Agile technique together with User Experience is the methodology employed in this project. The application is well received by the residents based on the usability testing results.

Keywords—component; formatting; style; styling; insert (key words)

I. INTRODUCTION

The Movement Control Order (MCO) was first implemented on 18 March 2020, in Malaysia to control the spread and mortality due to the COVID-19 [1]. However, the continuous MCO causes some social problems for the older adults, persons with disabilities, youth, families, indigenous people and the sport for development and peace [2]. For example, university students experienced heavy monetary pressure due to the loss of employment and social disorders like social withdrawal and wellness issues such as suicide attempts and depression [3]. Not only that, increasing in false COVID-19-related information until 260 investigations open until July 2020, causing much terror among the Malaysian [4].

Therefore, a neighbouring platform that provides a find or offers help in the neighborhood and collects the correct information should be encouraged to solve the social impact caused by COVID-19. Creating an online neighborhood platform with mobile participation can have more involvement, especially the youths and the young adults, than the traditional participation tools [5].

This study proposes Jiranku: An Online Neighborhood Platform, as one of the answers to the social impacts and the fake news problems. Jiranku provides a wall for the users to share their experiences to overcome the MCO lockdown and create a “give and take” platform to help the one who faced difficulties. Sharing experiences with someone who is having a similar emotional situation can reduce stress [6]. Next, Jiranku online platform also has a fake news detection mechanism to prevent the user from spreading the fake news to avoid nervousness among the users.

II. BACKGROUND AND RELATED WORK

A. The Importance and Challenges of Online Community

“Persistent-pervasive community” is the community in which people nowadays have constant contact and pervasive awareness due to digital communication technologies [7]. In other words, we are now driven to a life where the people can have the unavoidable familiarity with their companions’ lives similar to the pre-industrial village but in a cutting-edge setting. However, many social media platforms are introduced to serve this purpose but not in Malaysia yet. In addition, the neighborhood-targeted social media have more advantages as it can make the envisioned ideal rural local area more successful than offline ties between the neighbors alone. The reason behind it is because the offline relationship with the neighbors is just a foot away from the house [8], but the online relationship can increase awareness and engagement without caring about the distance. In this solemn moment, it is essential to know more about our nearby neighborhood within a distance as they are the ones who can help us during the difficulties.

Before developing the Jiranku application, the SP residents face four significant difficulties which can be solved using a mobile application. Foremost, fake news is a big concern for most SP residents as it created much chaos within the SP area. For instance, the spreading of fake news related to the main reason causing the nine deaths due to the COVID-19 is the irresponsible hawkers who do not follow the SOP. However, it is verified fake news by their godson. The fake news had caused the food court to face closure issues and make the SP residents scared to buy food from outside. Hence, it is a severe problem and can be solved if we have a reliable news platform.

Next, it is the issues about managing the Facebook Group. As an experienced Facebook Group admin, the stakeholder, Mr. Goy stated that it is hard to reduce offensive posts and fake news. It is difficult for Facebook Admins to delete fake news or offensive posts as thousands of Facebook posts are posted inside the Facebook Group. In addition, the posts inside the Facebook Group consist of different categories, including the crime that happens in the neighborhood, the advertisement for the local product, the news shared by kind people, the questions asked and many. Hence, the suggestion given is to label up the posts and categories the posts. It can help the Facebook admin to manage the post quickly. Furthermore, the users can choose to watch what they want instead of spending lots of time finding the matching post.

Additionally, SP residents find it hard to get the local authorities' number since not all local authorities can be searched online. The problem frustrated the Facebook Group admin as they always received lots of private messages from the Facebook members asking the authorities' numbers. Hence, the suggestion from the stakeholders is to create a Yellow Page that can include all the authorities and their numbers. It can help the SP residents to contact the respective authorities without waiting for replies from the Facebook Group Admin.

Next, the last challenge faced by the SP residents is that the advertising inside the Facebook Group is not as good as before. The business owners can still share the products online, but the likes and comments given are less compared to before. In addition, the stakeholder also complains that some of the businesses outside the SP area also advertise inside the Facebook Group. It causes many complaints from the user as the Facebook Group admin does not filter the irrelevant posts. Hence, their suggestion for the Jiranku application is to create an SP based e-commerce platform to serve all the businesses within the SP area. It is essential as the targeting marketing can raise their sales and increase their exposure within the SP area.

B. Comparison Analysis of Current Similar Systems

Before starting the project, a review about the local neighborhood platforms is performed. Table I shows the comparison of different similar application and its limitation. Malaysia's culture is the biggest problem for the local neighborhood platform to implement in Malaysia. For example, Nextdoor is one of the most famous local neighborhood platforms in the world. However, the Nextdoor app focuses on the housing area, which is not suitable in Malaysia as our neighborhood does not have a clear borderline about the community and will have the same name in different districts. Hence, it is hard for the Nextdoor app to be implemented in Malaysia. The same goes for the Olio app, and it is also a pretty famous application to reduce food waste in a specific area. However, it is impractical to implement in a small city like Sungai Petani as the excess food is managed by the non-government organization based on the religion to distribute to the needs since there is some restriction on the food due to the religious issue [9]. Therefore, it is hard for us to implement the Olio app in Malaysia.

TABLE I. COMPARISON BETWEEN SIMILAR EXISTING SYSTEMS

Title	Description	Limitation
Freecycle.org	<ul style="list-style-type: none"> Giving and getting stuff for free in the town Keeping good stuff out of the landfill 	<ul style="list-style-type: none"> Unwanted items usually are sold to the "Karang Guni" in Malaysia Already has a selling second-hand item platform
Patch	<ul style="list-style-type: none"> Provide the latest news surrounding the area Anyone can contribute the content directly to the site Participate in-discussion 	<ul style="list-style-type: none"> The news is messy and does not categories Fake news problem
Nextdoor	<ul style="list-style-type: none"> Connect with the people nearby the neighborhoods Reach the customers inside the neighborhood Share the latest information directly at neighborhood level 	<ul style="list-style-type: none"> Focus on the neighborhood area Hard to implement in Malaysia due to the our neighborhood is close to each other
Olio	<ul style="list-style-type: none"> Reach with the neighborhood and the local business to share the excess food 	<ul style="list-style-type: none"> Food waste is not a big concern in Malaysia
Facebook Neighborhood	<ul style="list-style-type: none"> Link with Facebook Create a new neighborhood profile 	<ul style="list-style-type: none"> Does not have address authentication Can use fake name and identity

There are three features chosen to compare both applications: User and Address Authentication, Interaction with the users, and Help Map because those features being the basic features for a neighborhood platform. User and Address Authentication authenticates the user in the application is a Sungai Petani resident and prevent false information or news from spreading. Next, interaction with the users is essential for a social media application as it has two-way communication with the one who shares the news and the viewer. Lastly, Help Map for the users is essential in today's neighborhood platform as most of the neighborhood platform also serves as a helping platform within the resident area. Table II shows the comparison of the features between 3 existing systems as stated above.

TABLE II. COMPARISON OF MAIN FEATURES

Features	Nextdoor App	Facebook Neighborhood	Patch App
User and Address Authentication	Yes	No	No
Interaction with the Users	Yes	Yes	Yes
Help Map for the User	No	No	No

III. METHODOLOGY

A. System Development Process

The Jiranku application uses the Agile method combined with the User Experience for the development since the Agile methodology focuses more on the interaction between the users and customer collaboration, similar to the Jiranku application's primary direction. The Agile Phase with UI includes the gathering requirements, development, testing and adjustment. The first Gathering Requirement phase is focusing on the requirements and ideas to understand the direction for the proposed solution. Next, the Development phase emphasizes the low-fidelity prototype, high fidelity prototype and improvement for the prototype. Furthermore, the Testing phase puts in mind to find as many defects as possible with functional testing, usability testing and system testing. Last but not least, the Adjustment phase is time for us to improve the proposed system based on the feedback from the users.

TABLE III. AGILE ACTIVITY PLANNING AND OUTCOMES

Phase	Activity Planning	Outcomes
Gather Requirements	Collect and elicit the requirement via an interview with the Facebook SP group admins	Software Requirements Specification and Software Design Document
	Gather the ideas and functionality for the prototype using the questionnaire with the targeted users, literature review and research	Feedback and opinions from the targeted users collected and generate a report to analyse
Development	Developed the proposed system using the MarvelApp tool for the first prototyping	Ensure the design is matched with the requirements and the users' taste
	Start coding the proposed system using Visual Studio for the high fidelity prototype	Make sure the designed system is functional and met the requirements agreed
	Improve the user interface of the proposed system from the high fidelity prototype from phase 1	Create a mobile interface that can fulfill the user's desire and become more user-friendly
Testing	Functional testing and system testing	Find the defects and solve the problem as soon as possible
	Carry out a usability study by inviting the targeted users for testing	
Adjustment	Change the proposed system based on the feedback	Improve the functionality of the system

B. Technology Used

The section will talk about the technology that is utilized to create the Jiranku application.

1) Flutter Framework

The framework used for the proposed solution is the Flutter framework for the mobile application. Flutter has many benefits to a beginner-friendly framework as the developer is not required to create new code for the different platforms due to its one code base and ready-to-use widgets. It also can have better

performance in both Android (as Material Design) and iOS apps (as Cupertino).

2) Firebase Backend Service

The Firebase Backend Service is the optimal back-end service for the proposed project since it eliminates traditional back-end development and shifts the burden to the client. The best feature is the authentication service, allowing users to authenticate themselves using passwords, emails, telephone numbers, and widespread identity providers like Google, Facebook, and others. It includes basic authentication capabilities such as Sign in, Sign up, password reset/change, email reset/change, and SMS verification all at the same time. As a result, the authentication method for safe login is streamlined.

Next, the Cloud Firestore is a plus for the Firebase back-end service as it is an adaptable and scalable database for mobile, web, and server development from Firebase and Google Cloud. It can synchronize real-time information with the users via real-time listeners. In addition, it can support responsive apps regardless of the network delay or internet availability. Simultaneously, it can provide good integration with other Firebase and Google Cloud Platform products.

IV. REQUIREMENTS ANALYSIS AND SYSTEM DESIGN

The use case diagram for Jiranku application, which represented all of the use cases in this project, was shown in Figure 1. The SP Resident and Application Admin are the two actors who are present in the Jiranku application. The application admin can perform the use cases like Authenticate News. The remaining use cases, however, are accessible to all users. This project has 10 use cases, and each one is discussed below. Each use case is illustrated with several UML diagram such as use case description, sequence diagram and activity diagram.

Jiranku system is built on a Model-View-Controller architecture (MVC). Model. Jiranku system is built on a Model-View-Controller architecture (MVC) as MVC pattern divides the Jiranku system's input, processing and output. The model, the view and the controller are three interlinked aspects of the model. All three component listed above are designed to handle various development elements of the Jiranku system.

In the MVC development, the controller processes the Jiranku system's request and control the model to prepare any necessary information needed for the interface (view). The view demonstrates the final outcomes using the data processed and instructions given by the controller. In addition, MVC also uses a responsive design approach. In other word, it can produce different kind of view to respective user as Jiranku system has different kind of view for the Neighborhood Wall interface.

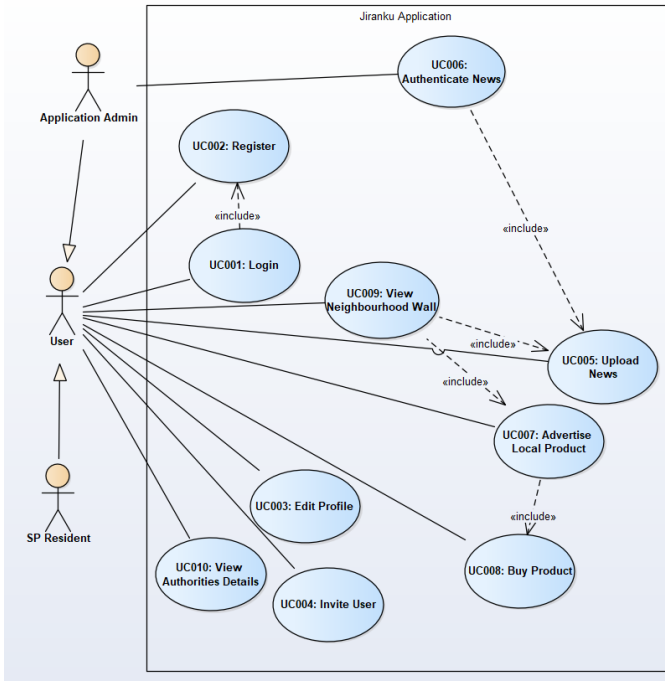


Figure 1. Jiranku Application Use Case Diagram

TABLE IV. JIRANKU APPLICATION USE CASES

No	Use Case	Description
1	UC001: Login	The use case describes how the users login into the Jiranku application.
2	UC002: Register	The use case describes how the SP residents and the Jiranku admin to register in the Jiranku application
3	UC003: Edit Profile	The use case describes how the user can update the information after registering successfully if anything changes.
4	UC004: Invite User	The use case describes how the existing user shares the invitation code to the new user.
5	UC005: Upload News	The use case describes how the user uploads the new posts to Jiranku Application.
6	UC006: Authenticate News	The use case describes how the Application admin checks the news either as Official News or Fake News.
7	UC007: Advertise Local Product	The use case describes how the user uploads the product posts to Jiranku Application.
8	UC008: Buy Product	The use case describes how the user buys the local product from the product post.
9	UC009: View Neighborhood Wall	The use case describes how the user view the news post and product post in the Home Page of the application.
10	UC010: Yellow Page	The use case describes how the user finds the local authorities' number.

Jiranku application implemented MVVM architecture which consists of Model, View and View Model for the Flutter framework and MVC architecture which includes Model, View and Controller for Firebase Backend Services. Firebase firestore was selected to store the data involved in Jiranku application. The database was hosted in Firebase and used Firebase Function as API to connect the mobile application with the database.

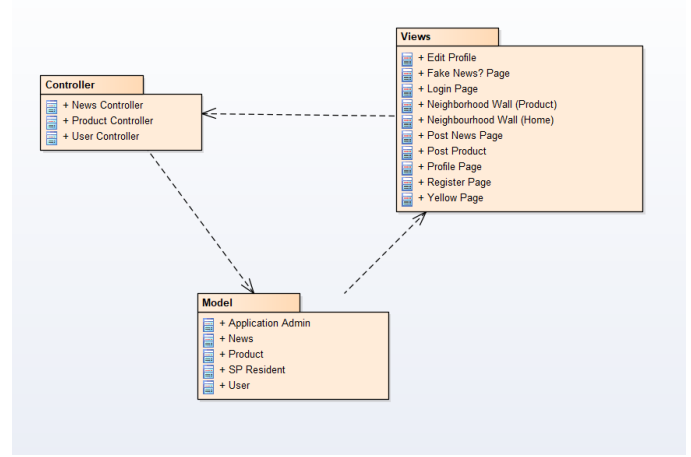


Figure 2. MVC Architecture Model of Jiranku Application

V. DEVELOPMENT AND INTERFACE DESIGN

Jiranku application is separated into User Module Interface which includes the Login, Register and Edit Profile, Home Module Interface which consists of Home Page, News Home Page, Product Home Page, Home Page and Yellow Page, News Interface which contains the Post News Page and Authenticate News Page and the last Product Interface which covers the Advertise Product and Buy Product Page.

For User Module Interface, both users can sign in and register using the Interface below. The user can select their preferences to see in the Home Page by selecting the categories shown. At the same time, the user also can edit profile if there are anything to update. Fig. 3 shows the Login Interface for Jiranku application. Fig. 4 shows the Register Interface while Fig. 5 demonstrates the Edit Profile Interface for the Jiranku application.

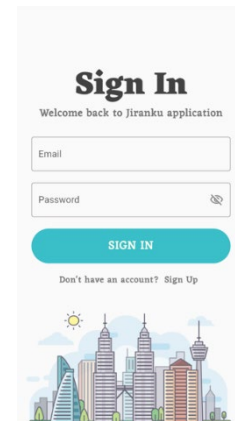
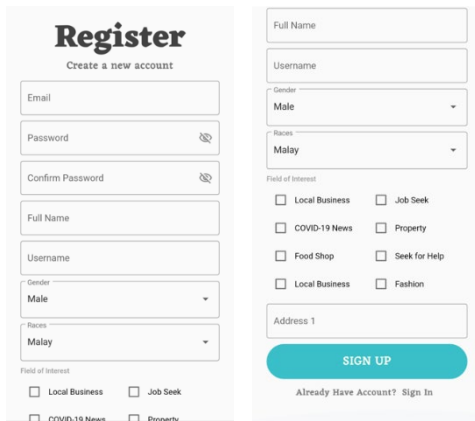


Figure 3. Login Interface for Jiranku application



Register
Create a new account

Email

Password

Confirm Password

Full Name

Username

Gender
Male

Races
Malay

Field of Interest

☐ Local Business ☐ Job Seek

☐ COVID-19 News ☐ Property

☐ Food Shop ☐ Seek for Help

☐ Local Business ☐ Fashion

Address 1

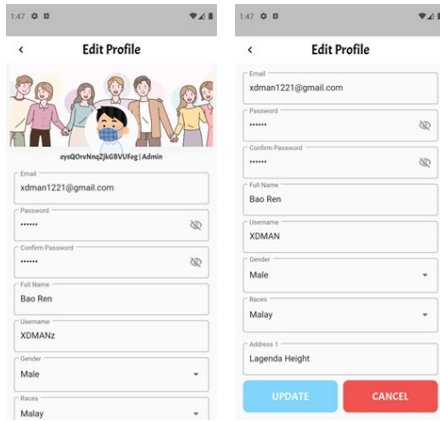
SIGN UP

Already Have Account? Sign In

Figure 4. Register Interface for Jiranku application



Figure 6. Home Page for Jiranku application



Edit Profile

Email: xdman1221@gmail.com

Password: *****

Confirm Password: *****

Full Name: Bao Ren

Username: XDMANZ

Gender: Male

Races: Malay

Address 1: Lagenda Height

UPDATE **CANCEL**

Figure 5. Edit Profile Interface for Jiranku application

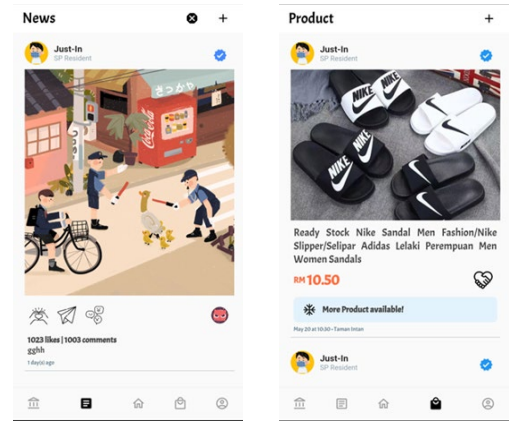


Figure 7. New and Product Page for Jiranku application

User can view the Neighborhood Wall (Home) after login into the Jiranku system. User can select different views of the Neighborhood Wall by tapping the icon (New or Cart) below. In other words, there are two Neighborhood Wall views which are Neighborhood Wall (News) if taps on the “News” icon and Neighborhood Wall (Product) if taps on the “Cart” icon. Furthermore, the User can redirect to Yellow Page if they tap on the Authorities icon. User can find the local authorities’ phone number and address. Fig. 6 shows the Home Page. Fig. 7 shows the News and Product Home Page. Fig. 8 shows the Yellow Page and Profile Page.

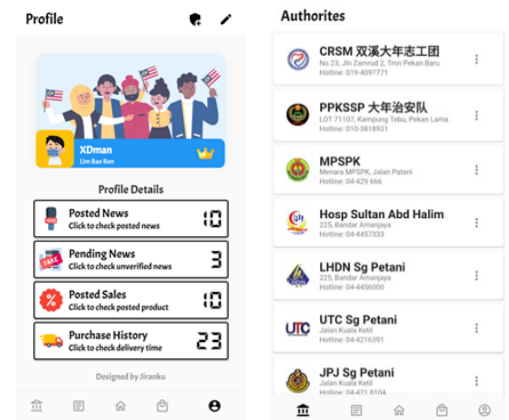


Figure 8. Edit Profile and Yellow Page for Jiranku application

From the New Module, user can post the news to the Jiranku application by selecting a photo and the tile. After uploading successfully, the application admin can do the authenticate the news. Fig. 9 shows the interface on Post News while Fig. 10 shows the Authenticate News Interface.



Figure 9. Post News Interface for Jiranku application

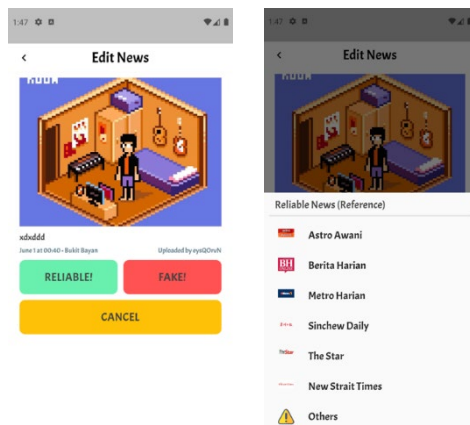


Figure 10. Authenticate News Interface for Jiranku application

From the Product Module, user can post the product and buy the product. Fig. 11 shows the interface on Post Product while Fig. 12 shows the Buy Local Product Interface.

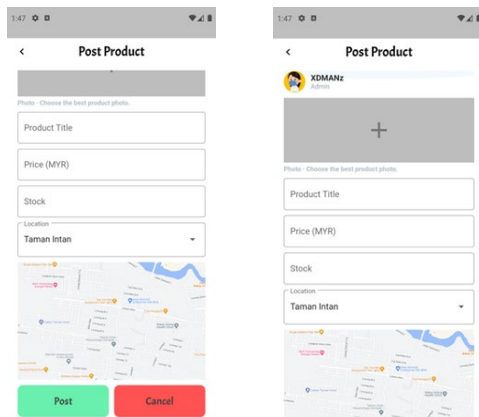


Figure 11. Post Product Interface for Jiranku application

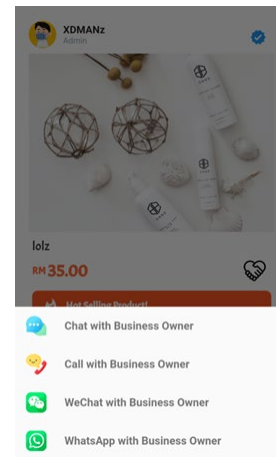


Figure 12. Buy Product Interface for Jiranku application

The final interface for the Jiranku application is the Invite the User interface in the Profile page. The user can invite the new user for the application. Fig. 13 shows the Invite the User interface.

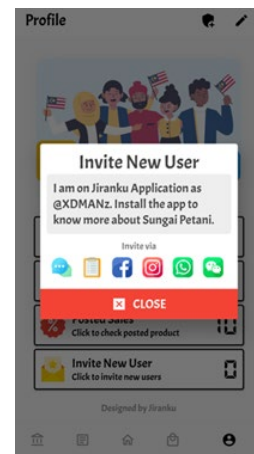


Figure 13. Login Interface for Jiranku application

VI. RESULTS AND FINDINGS

There are two types of testing implemented in the project; black-box testing and usability tests, that were carried out on Jiranku applications.

A. Black-box Testing

Black Box Testing is a software approach which test the system features without having expertise of the code structure and how the system works. The test cases designed with the valid or invalid input to make sure the expected results can match with the actual results to find any controversy on the requirements promised. Also, the test case added the prerequisites and the test data to ensure the tester understand to perform the correct result for the feature. For all 10 test cases, all test result is 100% passed. Fig. 14 is the Test Case Design for the UC010 View Authorities Details.

Test Case ID	TC010	Test Case Description	Test the View Yellow Page Functionality in Jiranku application		
Created By	Bao Ren	Reviewed By	Bao Ren	Version	1.0
QA Tester's Log					
Tester's Name	Bao Ren	Date Tested	June 12, 2022	Test Case	Pass
S #	Prerequisites:	S #	Test Data		
1	There is an active network connection	1			
2	Login into the Jiranku Application	2			
3	Download the Jiranku application in the phone	3			
Test Scenario	View the Yellow Page if the user taps on More icon				
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended	
1	Tap on the More icon at the bottom navigation bar.	Yellow Page is redirected	Yellow Page is redirected	Pass	

Figure 14. Test Case Design for the UC010 View Authorities Details

B. Usability Testing

Usability testing test the usability of the application among a representative group of users. The respondent involved in the usability testing is the residents live in Bandar Laguna Merbok, Sungai Petani. 64 respondents were invited who went to the Bandar Laguna Merbok's club house to do the usability testing. During the invitation, the respondent was given 10 minutes to test the features inside the application after a brief explanation was given. The respondent tested the application using the mobile phone without installing the Jiranku application inside his/her private mobile phone. After the usability testing, the respondents were given a Google Form to fill up their user experience on the application. Fig. 15 to Fig. 17 show the results, while Table V illustrates the feedback of the respondents.

Did the system can help you to get the local news free from Fake News?

64 responses

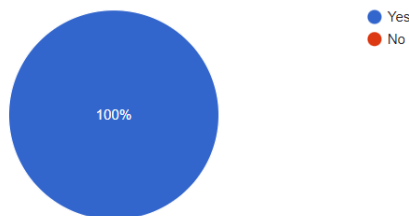


Figure 15. Reaction on the local news features from the respondents

Did the system can help you local business?

64 responses

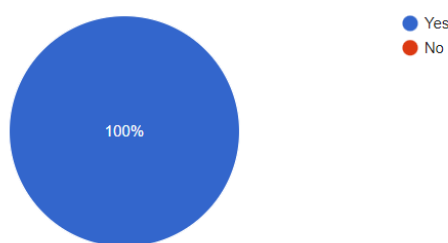


Figure 16. Reaction on the local business features from respondents

Did the system can help you to contact the authorities easily?

64 responses

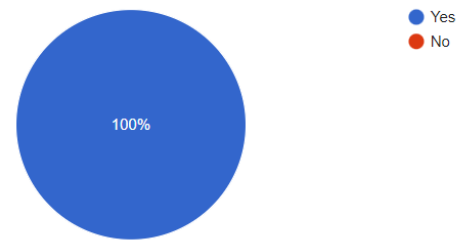


Figure 17. Reaction on the local authorities features from respondents

TABLE V. RESPONDENTS FEEDBACK

No	Feedback
1	I used to not have any issues with how well the app worked
2	Jiranku is the place to be if you want to keep current on what is happening in your area.
3	Staying Connected and Up-to-dateMy experiences with Jiranku have always been positive and informative.Great Place For Advice, Assistance, & Meeting People
4	Jiranku is a great way to stay informed of happenings in your area.
5	Jiranku is very valuable to me & the neighborhood where I live.

VII. CONCLUSION

Jiranku application is a neighborhood platform which served for the SP residents. It can reduce the fake local new within the neighborhood while enhance the marketing strategies for the local business. With the introduction of Jiranku application, the user can find the local authorities easily. However, both stakeholders and developers have still identified a number of weaknesses. Future improvements must be made in order to maximize this system's functionality and improve user experience.

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