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Research paper

Requirement Model of Rubber Trading on Android Operating System

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Abstract

The objective of this research is to design and develop a mobile application on android operating system for rubber trading and also to study the user satisfaction with mobile application on android operating system for rubber trading. The target population for this research is a group of people who has been involved in rubber trading. There are 50 users by means of purposive sampling. The statistical methods for analysis are in terms of mean and standard deviation. This research has been tapped into the systems development life cycle to carry out the operation with 6 functions as registration, login, customer information management, rubber price information management, management of rubber trading information and report. The development using android SDK on a mobile phone operating system, Android 5.0 or higher. And is built using Android Studio and Java Development Kit (JDK) as the programing language. From this research, it was found that the overall evaluation is the high levels ($\bar{x}$= 4.38, S.D. = 0.73). The results of the evaluation of the performance of applications by experts. And satisfaction of the users that have the same opinions. It is that developed applications are of acceptable quality. Usability is as the degree to which application can be used by people to meet their needs. It is easy to find and store data in a systematic. This application can help reduce the cost and new channel for customers or users to track data.

***Keywords*:** *Mobile applications, android operating system, rubber trading.*

1. Introduction

Rubber is an indispensable resource that has been one of the most essential economic plants in southern of Thailand. Rubber is also a processed plant that provides the raw material of which comes from the sap (in the phloem) known as latex or natural rubber latex, is regrade as a colloidal dispersion of rubber. It is required in the manufacturing of many industrial and commerce products such as tires and even a useful piece of equipment for the kitchen. Then Thailand has grown to become the world's number one producer and exporter of natural rubber. In addition to being the largest supplier of raw materials, it is of low value that may be described as a decrease in national income. Since the most import forms in which natural rubber was processed in rib smoked sheet, block rubber and concentrated latex, the rubber price has been decreased.[1] Also the rubber planter in Thung Song (Nakhon Si Thammarat Province, Thailand), the rubber product are in forms as rib smoked sheet, cup lump and latex (freshy milky sap). The price of the field latex depends solely on dry rubber content (DRC).

There are various methods that have been employed for determining the DRC. For practical use, especially in a small trading market, there are two way of measuring DRC as Metrolac device and microwave-assisted drying. [2]

Taking into consideration the tremendous growth in the use of mobile device, it has provided the development of application services to enable users to engage in communication, transaction and company's public relations. The demand for mobile app has increased to enhance the high value of business. [3] These app are often distributed through a varied operating system as iOS, Android or Windows Mobile. However android has been the worldwide operating system as the open source developed by Google that are being acquired by app creators and users to develop new features and update to devices. Moreover, Android is under an open source license that comply Google's compatibility requirement. [4]

For the researcher then, the development of mobile application on android operating system for rubber trading is the ways in which businesses keep track of their customer information and the database of daily trading and pricing on latex. This research work is therefore embarked upon to develop a mobile application on android platform with the aim of meeting the user's need to customize the app in several ways such as easy to use for instance.

2. Literary Reviews

N.Amreenkubra, N.Brundha, S.Nethra, V.Sivasakthi (2017), was developed a pharmacy application the android platform is used. This will accelerate the development and helps to build a high quality application for the mobile devices. The pharmacy application sets up an online communication between system admin and clientele. It is helpful for clientele to interrogate queries and state their concerns to the application regarding their medicines .This application will facilitate the clientele to get access to the medicine without walking through every pharmacy in the tracked location. This android application for pharmacy may be beneficial in helping patients to refill their medications. It has the ability to locate pharmacy to get medications from any place and it is helpful while travelling by this features the access of medicines will be

ample accessible, efficient and beneath time consuming and It will be apparent for the customers and patients who is in emergency to buy medicine so that the end user can purchase medicine through specific shop instead of walking through every pharmacy and the patient can get as much help from this application. It will help in reducing many human efforts, time taken and amount. [5]

B. Jarunan and R. Montean (2017), was study is to develop the procedure of the finding based on android operating system to search the nearby appropriate hospital in Bangkok. The task include using the path-planning of the Google map and GPS system to find the nearby hospital in Bangkok and also to obtain first aid information and health advice. To develop on android operating system being easy to use, the system is built using JAVA, PHP and MySQL. Therefore, ensuring usability and satisfaction, the result is a good level. [6]

J. Thanapat and T. Phuthithon (2016) the study is to develop and evaluate the android application as search tool for project of research and innovation to transmit technology for community foundation. The research adopted the ADDIE model in principle. ADDIE consists of five stages: analysis, design, development, implementation and evaluation. The information is kept in the server by MySQL, relevanting the research database such as research information, researcher's biography, research project and the track of research project anywhere and anytime. Therefore, ensuring usability and satisfaction in mobile application has been a major concern, the result is emphasis on high efficient usability. [7]

S. Prapatsorn and et al. (2016), the research is to study and develop mobile application to make a reservation of queue for Tattoo Studio Shop. This unique app deploy android operating system and several tool together with JAVA, Android SDK, jQuery, JDK and language programs are employed to develop the fronted users interface and functions. In terms of the backend development, SQLite is used to store information as database and readjust personalized data of customers. This app is also utilized to view on tattoo designs, booking a queue and follow the promotion of the store. [8]

From the relevant study above, the development of mobile application on android operating system is to easily access, pick speed up and perform high effective. So this research is emphasis on the usability of the apps. To assist users finding and collecting a systematic data through mobile device

3. Research Methodology

3.1. Research Framework

The researcher review literature on the development of mobile application on android operating system to analyze and synthesize to provide a research framework as shown in Figure 1.

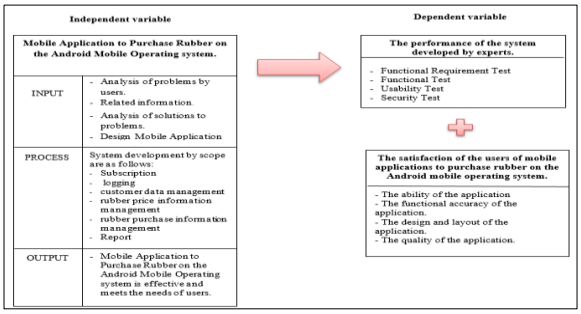

Fig. 1: Show the Research Framework.

3.2. Study and Collect Data

According to data compiled, the latex trading in Thung Song based on paper. A rubber trader would send a receipt after the rubber planter received the owed money. This process provides two copies of the receipt, one for the rubber trader and one for the rubber planter. The paper based database, it was found that there are many problems including of 1) Limited by a vast amount of customer's data 2) Difficult to sort data 3) Records can be lost or miscalculated.

3.3. System Design

From study and collect data, the research is to design the system and develop the operation with 6 functions as registration, login, customer information management, rubber price information management, management of rubber trading information and report. Researchers have designed a context diagram. [9] It shows the process of the system, using a symbol instead of the data movement. Then design a data flow diagram which describes the operation of the system shown in Figure 2.

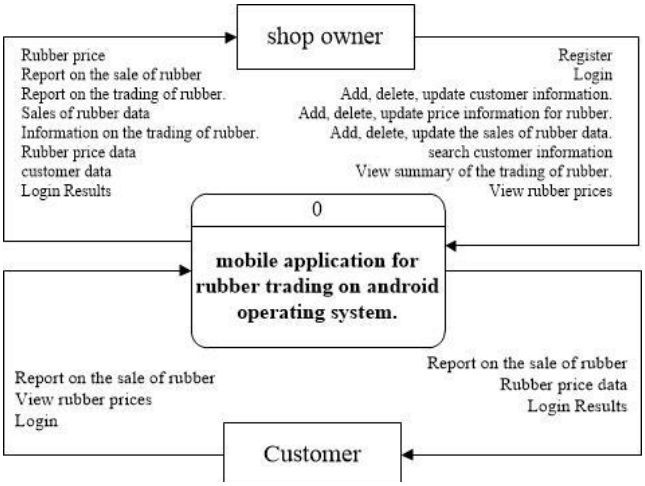

Fig. 2: Shows the Context Diagram of Mobile Application.

3.4. System Development

The development of mobile application on android operating system using android SDK on a mobile phone operating system, Android 5.0 or higher. And is built using Android Studio, [10] Java Development Kit (JDK), and create a database with MySQL. [11] When the application is developed successfully, test the functionality of applications developed. The sample was used to test the error and view feedback from user groups.

3.5. System Implementation

The research tool consisted of 1) the developed android mobile application for rubber trading. 2) The questionnaire to evaluate the mobile application usability by experts. 3) The questionnaire to evaluate the user satisfaction. About the testing of android mobile application for rubber trading, this research using three research tools are examined from two perspective. The first one, five experts evaluated the application usability and the second perspective is from 50 users. That the researcher used purposive sampling for respondent selection involving in rubber trading, to examine the user satisfaction. Through the testing and the evaluation, the usability of application is confirmed.

4. Results

The objective of this research is to design and develop android mobile application for rubber trading and also to evaluate the user satisfaction. This mobile application include of 6 functions: 1) registration 2) login 3) customer data management 4) rubber price information management 5) rubber trading information management 6) Report. The development of mobile applications has created as shown in Figure 3.

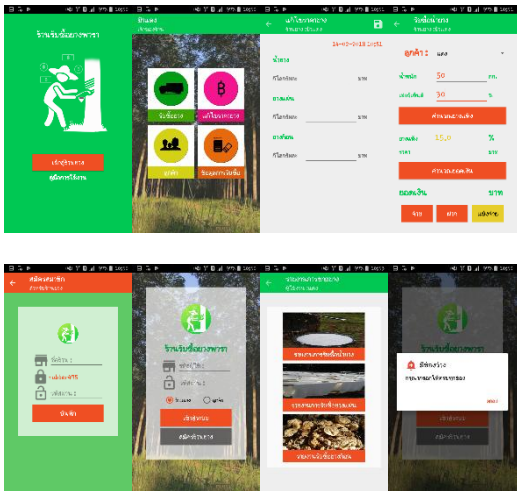

Fig. 3: Shows Mobile Application Screen.

From the evaluation from five experts usability and user satisfaction from the 50 samples by using the purposive sampling method, each item by mean and standard deviation. The results were compared with the mean of 5 levels, [12] as shown in the following table.

Table 1: Experimental Evaluation Results by Experts Overall on Each Side

Evaluation Items	$\bar{x}$	S.D.	Quality Level
1. Functional Requirement Test	4.30	0.77	high
2.Functional Test	4.33	0.80	high
3.Usability Test	4.32	0.63	high
4.Security Test	4.45	0.62	high
Summary of overall evaluation results	**4.34**	**0.70**	high

From table 1 shows that application usability evaluations developed by five experts. The overall average was high ($\bar{x}$ = 4.34, S.D. = 0.70), when considering each side, it was found that security test item average was highest. ($\bar{x}$ = 4.45, S.D. = 0.62), and functional requirement test item with an average minimum ($\bar{x}$ = 4.30, S.D. = 0.77).

Table 2: The Satisfaction of Users with an Application. Overall On Each Side

Evaluation Items	$\bar{x}$	S.D.	Satisfaction Levels
1. The ability of the application	4.30	0.76	high
2. The functional accuracyof the application.	4.39	0.81	high
3. The design and layout of the application.	4.12	0.88	high
4. The quality of the application.	4.70	0.45	highest
Summary of overall evaluation results	**4.38**	**0.73**	high

From table 2 shows that the results of the user satisfaction evaluation on the developed application. The overall average was high ($\bar{x}$ = 4.38, S.D. = 0.73), when considering each side, it was found that the quality of the application item average was highest. ($\bar{x}$ = 4.70, S.D. = 0.45), and the design and layout of the application item with an average minimum ($\bar{x}$ = 4.12, S.D. = 0.88).

5. Conclusion

The objective of this research is to design and develop android mobile application for rubber trading and also to evaluate the user satisfaction. This mobile application include of 6 functions: 1) register 2) logging 3) customer data management 4) rubber price information management 5) rubber trading information management 6) reports. The development of this app employs Android SDK that integrates Android 5.0 up operating system platform into mobile device and is built using Android studio and Java Development Kit (JDK).

From the results of this research, it was found that the five experts the evaluation of application usability is high level for overall result ($\bar{x}$ = 4.34, S.D. = 0.70). It was also found that the user satisfaction of 50 users are high level for overall results ($\bar{x}$ = 4.38, S.D. = 0.73). More results from the same opinion of the expertise and the user, this application has high quality. This application has been developed. It is acceptable to meet the needs of users, can be used practically and can be applied to other research.

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