



Application of usability testing for analyzing the quality of ‘apotek keluarga’ system in pekanbaru

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Abstract

Apotek Keluarga is a line of business that sells medicines in the city of Pekanbaru. Drug sales at these pharmacies are carried out *offline* where the costumers come to the pharmacy and *online* through the Apotek Keluarga application which can be downloaded via the google play store. However, the facilities offered by the Apotek Keluarga application has not been able to provide high satisfaction to its users, so that it has not fulfilled the initial goal of designing the application, that was to increase drug sales and obtain a high level of satisfaction. Therefore, the author conducted research in order to determine the quality of the application using the usability testing method. The analysis of the Apotek Keluarga application aimed to find out the shortcomings of the built application, in terms of learnability, efficiency, memorability, error and satisfaction. The results obtained that the application has good quality according to users with the average of 72.5% learnability, 74.2% efficiency, 74.4% memorability, 70.1% errors, and 71.4% satisfaction. However, the weakness of the application is that the majority of its customers do not know about the Apotek Keluarga application.

Keywords: Family Pharmacy; Usability Testing; Application; User Satisfaction; Analysis

Introduction

Pharmacy is a place to mix and sell drugs that are managed by government institutions or agencies with the task of providing health services in cities and regions [1]. Medicines that are sold without a doctor's prescription can be purchased online or offline. One of the pharmacies that has implemented online and offline drug trading is the Apotek Keluarga, freely translated as Keluarga Pharmacy. The Pharmacy is one of the large pharmacies in Pekanbaru city. People can order online drugs using an Android-based smartphone through the Apotek Keluarga application, where the application can be downloaded via the Google Play Store application.

The Apotek Keluarga application provides services for consultation and information regarding its social media. However, the facilities offered by the Apotek Keluarga application has not been able to provide users or customers with high satisfaction. So that it did not fulfill the initial goal of designing the application that is to increase drug sales and to obtain a high level of satisfaction. To overcome the problems that occur, there were many methods that can be used to analyze the application

Some methods that can be used to analyze the application are McCALL [2], Servqual [3], Pieces [4], Usability [5], Delon and Mclean Model [6]. In the current conducted research, the usability testing method was employed. This method focuses on the quality of the analyzed application. Then the level of usability can determine to the extent the application can be used by users to achieve goals or objectives. This method is also used to see the quality of the interface of the Apotek Keluarga application. Applications that have a high usability level will generally have many users and use them frequently. Vice versa, if it has a low usability level, it will usually be abandoned by the users and use other similar applications that have a high usability level [7].

The usability testing method is an evaluation method to see the ease and convenience level of users in using or interacting with an information system [8]. Usability Testing is measured by five criteria, namely Learnability, Efficiency, Memorability, Errors, and Satisfaction [9]. The use of the usability testing method has been used by several researchers including [10] showing that 4 USE variables are significant with the usability of the Nagari Mobile Banking application. Usefulness affects, Ease of Use affects, Ease of Learning affects and Satisfaction effects of Usability Nagari Mobile Banking were 6.15%, 24.3%, 5.52%, and 15.36% respectively. Then research conducted by [11] evaluated KRS online using usability testing, the evaluation showed that the KRS Online website had the

highest score on the memorability indicator that is 3.97. This means that the KRS Online Website was easy to remember, navigate and layout for information. Furthermore, research [12] conducted an analysis on online transportation applications, the results obtained that user satisfaction with the application was moderate to high.

In this study, data collection was carried out through a questionnaire where the selection of questionnaire respondents or research samples used the Probability Sampling technique specifically called namely Random Sampling (Random Sampling). In determining the minimum sample, the author employed the Slovin formula. The sample represents the general public who have made transactions at the Apotek Keluarga. The analysis of the Apotek Keluarga application aimed to find out the shortcomings of the application that had been built: learnability, efficiency, memorability, error and satisfaction. So that it was hoped that in the future the Apotek Keluarga can benefit from the results of this research as a reference for the development and improvement of the Pharmacy application for the future.

Method

The research methodology is a scientific process or method carried out by researchers to facilitate research work, **Figure 1** is the research methodology steps.

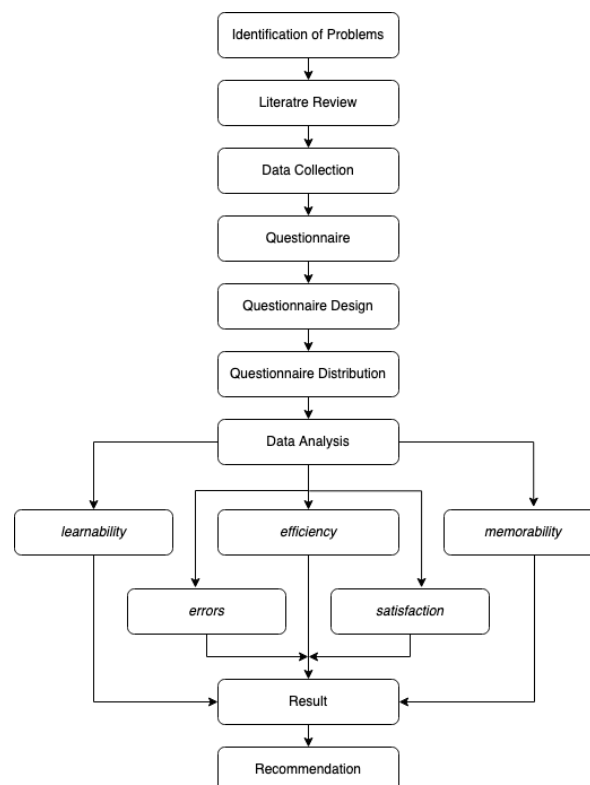


Figure 1. Research Mothodology

The following the research methodology explanation steps:

A. Gap Identification

In this research, the first stage was gap identification, which aimed to find out the problems that would be solved through this research. The problems highlighted in this research were the Apotek Keluarga application which was still rarely used by the public to buy drugs or consultations, so it had not fulfilled the initial purpose of designing the application that was to increase the drugs sale and purchase and obtain a high level of satisfaction.

B. Literature review

The literature review is the second stage in the flow of this research. In this part, the writers learn more about the research issues and understand how to conduct research under the theme of usability testing analysis.

C. Data Collection

One way to get accurate information is to collect data. Accurate information is needed by organizations as an input to achieve their goals. In this study, data collection was carried out by distributing questionnaires in 2 ways: on the spot questionnaire where questionnaires were distributed at Apotek Keluarga, and online using google forms where the questionnaire was distributed through social media groups such as Facebook, WhatsApp.

D. Questionnaire

Questionnaire is a data collection technique that is done by giving written questions and providing answers with several options or choices for each question to be answered by the respondent [13]. In this study a questionnaire was used to determine the quality of the “Apotek Keluarga” application based on the perspective of the people of Pekanbaru City who have been customers at the Pharmacy.

E. Designing Questionnaire

The questionnaire in this study was designed using a google form grouped into 5 parts. Before filling out these sections, the author provided validation questions to find out whether the respondent knew the targeted application. The grouping on the questionnaire aimed to determine the quality of learnability, efficiency, memorability, errors and satisfaction of the Apotek Keluarga application.

The questionnaire was designed using a Likert scale, the Likert scale is a psychometric scale commonly used in questionnaires, and is the most widely used scale in survey research [14]. With a Likert scale, the measured variables were translated into variable indicators. Then the indicator was used as a benchmark for compiling instrument items that can be in the form of questions or statements. The data from the tested variables in this study were addressed to respondents using a scale of 1-5 to obtain data that was ordinal in nature, then the scores were given shown in **Table 1**.

Table 1. The Score Level of Questionnaire Prompts

Questionnaire Choices	Description	Score
STS	Sangat Tidak Setuju (highly Disagree)	1
TS	Tidak Setuju (Disagree)	2
N	Netral (Neutral)	3
S	Setuju (Agree)	4
SS	Sangat Setuju (Highly agree)	5

F. Administiring Questionnaire

After designing the questionnaire, the author will distribute questionnaires through social media. The distribution was carried out by sending messages containing a google form questionnaire link to WhatsApp users in the Pekanbaru area and other social media such as Facebook, who had made transactions at the Apotek Keluarga. In doing the distribution the author limited the respondents which were taken from the sample using the Slovin formula (1). The Slovin formula was used to determine the sample size of a known population [15].

$$n = \frac{N}{(1+Na^2)} \quad (1)$$

The population of this study were customers of the Apotek Keluarga in December 2020 where the total population was 62,456 people. The customer data comes from the total number of customers from each branch of the pharmacy.

In this study, Probability Sampling with Random Sampling technique was employed. Random Sampling is a sampling method where each member of the population is given the same opportunity to be selected as a sample [16]. Sampling with the above technique aimed to make it easier to determine the limit of the population that would be the sample so that the normality of the data can be tested. This provided equal opportunities/opportunities for each element or member of the population to be selected as a sample. The following is the result of the sample calculation using the Slovin formula.

$$n = \frac{N}{(1 + Na^2)} = \frac{62.456}{((1 + (62.456)(0,05^2))} = \frac{62.456}{((1 + (62.456)(0,0025))}$$

$$n = \frac{62.456}{(1 + 156,14)} = \frac{62.456}{157,14} = 397,4544991727122 = 397$$

Due to time constraints and the COVID-19 pandemic, the authors used the minimum sample requirement in this study, which was 306 people.

G. Data Analysis

This stage is the most important part of the research because this stage determines the results of the research. Data analysis was carried out using the Validity Test and Reliability Test using SPSS application. The tested data were the

gathered questionnaire respondent in this study. After getting the results of the analysis in the form of information on the quality of the Apotek Keluarga application in terms of learnability, efficiency, memorability, errors and satisfaction, the author provided recommendations for the Pharmacy's application.

H. Recommendation

This recommendation was one of the benefits of this research. The recommendations were obtained based on the results of data analysis. The purpose of providing recommendations was to find out the shortcomings of Application of Apotek Keluarga that they could become a reference when developing their application.

Results and Discussion

This study aimed to determine the shortcomings of the android application called Apotek Keluarga. The shortcomings were examined through its learnability, efficiency, memorability, errors and satisfaction using a questionnaire. Respondents who contributed to filling out the questionnaire were grouped into three characteristics, after the grouping the validity and reliability were carried out using the SPSS version 26 application. The results of distributing the questionnaire were 306 respondents, of which 61% of the respondents did not know the Apotek Keluarga application, so it can be concluded that majority of Apotek Keluarga customers did not know about the Apotek Keluarga application. This was one of the weaknesses or shortcomings of the Family Pharmacy application.

A. Respondent Characteristics

The respondents had various which were displayed based on the frequency and percentage of the data obtained. The percentage result is the result of rounding off the distribution of the frequency of each group with the total respondents. With these characteristics, the writer can find out the groups that fill out this questionnaire. The characteristics in this study focused on gender, age, and education.

1) Gender

Based on the 306 respondents obtained through questionnaires, the gender distribution can be said that the overall sample was 56.5% male and the remaining 43.5% female shown in **Table 2**. These results show that customers at the Apotek Keluarga who responded the questionnaire were dominated by male customers.

Table 2. The Respondent's Gender Characteristics

Gender	Frequency	Percentage
Male	173	56,5 %
Female	133	43,5 %
Total	306	100 %

2) Age

Based on 306 customer's responses, there are 33 age groupings, of which the largest number of respondents was at the age of 25 years with a percentage of 16.7%, then the second position was aged 24 years with a percentage of 10.5%, and the third position was the age of 23 as much as 8.5 %. This showed that customers at the Apotek Keluarga responding the questionnaire were dominated by young people to adults with an age range of 20 to 30 years. **Table 3** is data characteristics of the age of respondents.

Table 3. Respondent's Age Characteristics

Age	Frequency	Percentage
15	2	0,7 %
16	1	0,3 %
18	2	0,7 %
19	10	3,3 %
20	18	5,9 %
21	14	4,6 %
22	15	4,9 %
23	26	8,5 %
24	32	10,5 %
25	51	16,7 %
26	22	7,2 %
27	25	8,2 %
28	12	3,9 %
29	16	5,2 %
30	14	4,6 %

Age	Frequency	Percentage
31	3	1 %
32	5	1,6 %
33	11	3,6 %
34	3	1 %
35	7	2,3 %
36	2	0,7 %
37	1	0,3 %
38	2	0,7 %
39	1	0,3 %
40	1	0,3 %
41	1	0,3 %
42	3	1 %
43	1	0,3 %
44	1	0,3 %
45	1	0,3 %
46	1	0,3 %
50	1	0,3 %
56	1	0,3 %
Total	306	100 %

3) Educational Background

Educational characteristics are the last educational data from the questionnaire respondents in this study. Of the 306 samples obtained, the majority of respondents in filling out this questionnaire were respondents with the last education, namely high school as many as 49.3% or 151 people. **Table 4** is the education data of all respondents.

Table 4. Educational Background of the Respondents

Education	Frequency	Percentage
SD	0	0 %
SMP	12	3,9 %
SMA	151	49,3 %
S1	137	44,8 %
S2	5	1,6 %
S3	1	0,3 %
Total	306	100 %

B. Validity Test

Validity test is the level of confidence and suitability of the employed instrument to measure the questionnaire trustworthiness [17]. Validity refers to the consistency and accuracy of the test scores on the questionnaire used as instrument [18]. In this study, the validity test was used to measure whether the questionnaire was valid or not. The questionnaire was declared valid if the questions or statements on the questionnaire was able to collect accurate data. Meanwhile, the method used to assess the validity of the questionnaire in this study was product moment correlation.

This study conducted a validity test by analyzing each instrument item in the questionnaire, after the results of the calculations were carried out, then tested with the r-product moment table with a 95% confidence level value. Each instrument item was tested into the R-Value formula with the criteria that if $r \text{ value} > r \text{ table}$, then it can be said that it was valid and vice versa, then the instrument item was invalid. In this study, the number of trial samples was 120 samples taken from the number of respondents who knew the Apotek Keluarga application. The r table value in a sample of 120 respondents with a significant level of 5% is 0.1779. **Table 5** is the result of testing the validity of the questionnaire using the SPSS application.

Table 5. Validity Test Result

Variable	Indicator	R Value	R Table	Remarks
X1: Learnability	X1.1	0,877	0,1779	Valid
	X1.2	0,855	0,1779	Valid
	X1.3	0,918	0,1779	Valid
	X1.4	0,884	0,1779	Valid
X2: Efficiency	X2.1	0,884	0,1779	Valid

Variable	Indicator	R Value	R Table	Remarks
	X2.2	0,922	0,1779	Valid
	X2.3	0,900	0,1779	Valid
	X2.4	0,889	0,1779	Valid
X3: Memorability	X3.1	0,855	0,1779	Valid
	X3.2	0,924	0,1779	Valid
	X3.3	0,901	0,1779	Valid
	X3.4	0,884	0,1779	Valid
X4: Errors	X4.1	0,885	0,1779	Valid
	X4.2	0,897	0,1779	Valid
	X4.3	0,908	0,1779	Valid
	X4.4	0,888	0,1779	Valid
X5: Satisfaction	X5.1	0,796	0,1779	Valid
	X5.2	0,880	0,1779	Valid
	X5.3	0,907	0,1779	Valid
	X5.4	0,894	0,1779	Valid

Based on Table 5 above, it shows that there are 5 variables that are the focus of this research. Each of the question items on both independent and dependent variables shows that the calculated r value is greater than the r table. Therefore, it can be concluded that the questionnaire data obtained from the questionnaires distributed to respondents is valid.

C. Reliability Test

The reliability test of a questionnaire instrument is a test used to find out a questionnaire used in research data collection is reliable or not [19]. A variable is said to be reliable if it gives a Cronbach Alpha value > 0.60.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.971	.972	20

Figure 2. Reliability Test Result

Based on the Figure 2, it shows the results of calculations carried out using SPSS 26, the Cronbach's alpha value was 0.838. It is higher than 0.6, which means that the questionnaire data in this study is reliable.

D. Usability Test

Based on research conducted [20], this study measures usability by recapitulation of all the answers to statements that were answered by respondents. Of the 306 respondents, there were only 120 respondents who knew about the Apotek Keluarga application, the data was obtained through validation questions in the questionnaire given to respondents before filling out the usability test questionnaire. So that the number of valid samples in this study was 120 samples.

After the answers from the respondents were collected, the next step was to calculate the recapitulation value of the answers from the respondents to get the total and average value for each variable using the SPSS application. Figure 3 indicated the result of the questionnaire recapitulation that was collected from the respondents.

	N	Minimum	Maximum	Mean	Std. Deviation
Learnability	120	4	20	14.50	2.831
Efficiency	120	4	20	14.83	2.832
Memorability	120	4	20	14.88	2.554
Errors	120	4	20	14.02	3.084
Satisfaction	120	4	20	14.28	2.893
Valid N (listwise)	120				

Figure 3. Recapitulation of Responden

Figure 3 is a recapitulation of the respondents' answers obtained, then the results of the questionnaire were calculated. This calculation was used to get the results of each of the usability variables assigned. **Table 6** is the average value of the variables from the respondents' answers.

Table 6. The Average Variable Score

Variables	Average Percentage
Learnability	72,5 %
Efficiency	74,2 %
Memorability	74,4%
Errors	70,1 %
Satisfaction	71,4 %

Learnability obtains a value of 72.5%, meaning that most of the respondents agree that the Apotek Keluarga application was easy to use. While efficiency with a value of 74.2%, meaning that most respondents agree that the family pharmacy application has the ability to provide information quickly. Memorability with a value of 74.4% that means most respondents agree that the pharmacy application is easy to learn and remember. In terms of errors, the score is 70.1%, meaning that most of the respondents agree that the Apotek Keluarga application has the information contained in the link running properly according to its function. However, this value is the lowest value of the other variables, so it is necessary to improve quality in overcoming errors experienced by users. And the last is satisfaction with a value of 71.4%, meaning that most of the respondents agree that the family pharmacy application is satisfactory.

The average percentage value of each usability testing variable can determine the results of all variables by adding up all the average percentage values of the variables and then dividing by the number of variables. Then the combined value of all variables is 72.52%, which means that most of the respondents agree that the Apotek Keluarga application is good for its users.

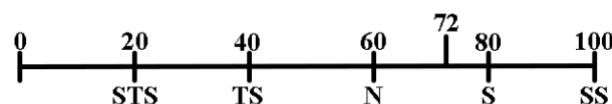


Figure 4. Usability Test Result

E. Recommendation

Based on the results of usability testing on the Apotek Keluarga application shown in **Figure 5**, the author would provide several recommendations as follows:

1. Improving the handling of errors in the application because it has the lowest value of all tested variables.
2. Adding a feedback feature to the Apotek Keluarga application, because it can be a measuring tool for user's satisfaction on the application.
3. Adding a feature of giving criticism and suggestions to the application which can be useful as a basis for improving the quality of the application.
4. And finally optimizing the features of the Apotek Keluarga application in order to improve the quality of the application.

Conclusion

Based on the discussion on the results of the usability testing of the Apotek Keluarga application, it can be concluded that each value of the variables -learnability, efficiency, memorability, errors and satisfaction-, usability variables provide good quality according to users. However, the weakness of the application is that the majority of the pharmacy's customers do not know about the application. Because of all respondents who filled out the questionnaire, only 39.1% out of 306 respondents knew about the application. And in terms of testing errors in the Apotek Keluarga application, it gets the lowest value compared to other variables.

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