

Usability Evaluation OVO Electronic Wallet Application Using Usability Testing and Usefulness, Satisfaction, Ease Of Use Questionnaire

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Abstract— Electronic wallet technology provides efficiency, flexibility, and security in every electronic transaction. OVO is one of several electronic wallets in Indonesia. Other electronic wallets in Indonesia are Jenius, Gopay, and Dana. This research aims to examine the usability parameters of OVO electronic wallet application using usability testing method and usefulness, satisfaction, and ease of use questionnaire approach. This research begins with some user reviews on google playstore mention that using OVO application to make payments is considered less effective and efficient. Data in usability testing collected through task testing and interviews with 9 respondents. Usefulness, satisfaction, and ease of use questionnaire approach done by distribute the questionnaire to 100 respondents. Qualitative data is presented by descriptive sentences, while quantitative data is processed by statistically and mathematically using tools such as Microsoft Excel and SPSS software. Results of this research are values for 7 parameters. The process status parameter has a success rate of 86 percent, while the process time parameter has an efficiency of 0.03 goals per second. Interview results represent the problem parameters by showing OVO applications deficiency on notification side, login method, and interface layout consistency. Usability of OVO applications according to usefulness, satisfaction, and ease of use questionnaire results is 81.46 percent. The parameters of usefulness, ease of use, ease of learning, and satisfaction produce a good value for OVO applications.

Keywords—Electronic wallet, Usability testing, Usefulness satisfaction and ease of use questionnaire, User experience, OVO

I. INTRODUCTION

OVO is one of Indonesia electronic wallet application that has been used by users since 2016. OVO offers easy payment for phone credits, data plan, and insurance. OVO has several negative reviews on google playstore. One of the negative reviews that users feel on OVO application are in UX (user experience) side that causes UX from the application not work as well as expected by user. Some users complain that OVO application has a slow process response, and payment process using OVO is too long for them. The UX problems that experienced by OVO users included in usability of an application. Usability refers to how users who use the application can completed their tasks quickly and easily [1].

Usability level measurement of OVO electronic wallet applications can be done using usability testing and USE (Usefulness, Satisfaction, and Ease of use) questionnaire. This method was chosen because based on ISO international standards, usability has three aspects, efficiency, effectiveness, and satisfaction. That three aspects have a correlation which influences usefulness and ease of use parameter in USE questionnaire [2].

This research will discuss the usability assessment of OVO electronic wallet applications according to the data that collected from users using usability testing method and USE questionnaire approach. This research was conducted to determine usability level of OVO electronic wallet applications according to user. This research consist of several parts as follows, section I contains an Introduction about user experience perception on OVO electronic wallet application, section II contains related work for usability testing, section III contains the methodology for assess OVO application, section IV contains the results and discussion about OVO assessment, and section V contains the conclusion and future work about this research.

II. RELATED WORK

Usability analysis in user experience at UMM KRS-online system using USE questionnaire by Wahyu Andhyka Kusuma, Vebrian Noviasari, and Gita Indah Marthasari. The problem in this research is that there is no software quality standard measurement for the UMM KRS-online system. The purpose of this study is to measure and determine the level of user satisfaction against the UMM KRS-online system. The results of usability analysis on the UMM KRS-online system are the feasibility percentage

value of 73.312 and the UMM KRS-online system got a "feasible" value [3].

Usability analysis and improvement of KAI Access mobile application using usability testing and USE questionnaire by Kevin Ryan Hadi, Hanifah Muslimah Az-Zahra, and Lutfi Fanani. The problem in this study is a bad assessment according to reviews in the Playstore against user interface (UI), user experience (UX), and features of the KAI Access application. The purpose of this study is to measure the level of usability and user satisfaction of the KAI Access application. The results showed that the usability value before the recommendation for improvement was 47.58% with a sufficient predicate, and after the recommendation for improvement was 78.27% with a good predicate [4].

Usability evaluation of Go-Jek application using usability testing method by Muhammad Ismail Farouqi, Ismiarta Aknuranda, and Admaja Dwi Herlambang. The problem in this study is responding to complaints from some users who are uncomfortable with the performance and user experience (UX) of Go-Jek application. This research aims to explore usability problems and evaluate the level of usability in Go-Jek application. The results showed that there were five usability problems in Go-Jek application. The results of usability measurement get a value of 100% for the level of convenience, 0.01 goals/sec for the speed level, 0.1 for the error rate, and 60% - 70% for the level of satisfaction [5].

Usability testing of Moodle application in the context of M-learning in HE in India with special reference to MBA and MCA courses by Kamlesh A. Meshram and Manimala Puri. The problem in this research is there has not been a usability assessment of the Moodle application. The purpose of this research is to test the usability of Moodle application in the context of teaching-learning process. The results show the five usability dimensions that proposed in this research have a significant relationship with the user satisfaction [6].

A study on quality and reliability of websites using functional testing and usability testing by K. Jaganeshwari and S. Djodilatchoumy. The problem in this research is the number of websites at this time but not all websites meet the usability points. This research aims to propose the usability testing research framework. The results of this research show that there are three characteristics that have the potential to improve the quality of the website, namely functionality, reliability, and understanding [7].

III. METHODOLOGY

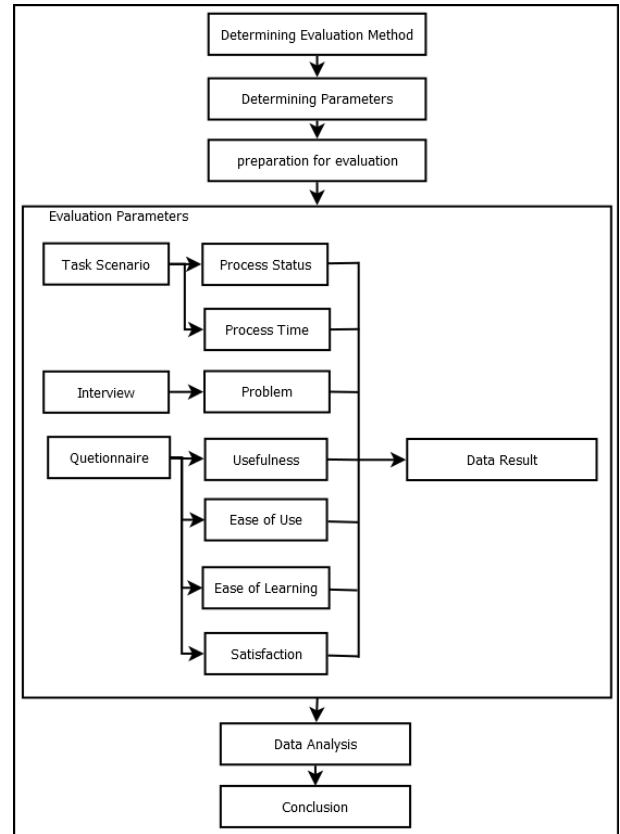


Figure 1. Research stages flowchart

Figure 1 explains research stages flowchart that used in this research.

III.I. Determining Evaluation Method and Parameter Methods that used in measuring usability level OVO electronic wallet applications are usability testing and USE (Usefulness, Satisfaction, Ease of use) questionnaire. Table 1 explains parameters details that used in this research.

Table 1. Method Parameter

Method	Parameter
Usability testing	Process status
	Process time
	Problem
USE (usefulness, satisfaction, and ease of use)	Usefulness
	Ease of use
	Ease of learning
	Satisfaction

III.II. Preparation for Evaluation

Preparation for evaluating usability level of OVO electronic wallet application are by setting limits on number and criteria of respondents, making descriptions of task scenario for usability testing, and designing the USE questionnaire. Number of usability testing respondents was

9 people and will be grouped into 3 categories. Table 2 explain respondents' number for each group [8].

Table 2. Respondents Group

User Group	Respondents Number	Respondents Age Range
Teens	3	(13 - 17 years)
College students	3	(18 - 24 years)
Adults	3	(25 - 64 years)

Number of respondents who filling USE questionnaire was determined using Slovin formula. Based on calculations, this research will require sample of 100 respondents.

III.III. Evaluation Parameters

Evaluation results of each parameter will be recorded in numerical scores that will be used in statistical and mathematical calculation process using Microsoft Excel and SPSS, while problem parameters will be recorded in descriptive sentence. Table 3 explains task scenario that will be given to respondents.

Table 3. Task Scenario

Task	Scenario
1	You plan to buy certain amount of phone credits, you will make purchases and payments for these credits using OVO electronic wallet application through your smartphone. Perform the process of buying and paying phone credits using OVO electronic wallet application.
2	You plan to purchase certain amount of data plan, you will make purchases and payments for data plan using OVO electronic wallet application through your smartphone. Perform process of purchasing and payment data plan using OVO electronic wallet application.

Process status is obtained when usability testing respondents performs task scenario test. Process time will be measured using stopwatch in seconds unit. Interviews were conducted with respondents who had carried out usability testing process through task scenario.

Table 4. USE Questionnaire Criteria

ID	Criteria
	Usefulness
U1	It helps me be more effective.
U2	It helps me be more productive.
U3	It is useful.
U4	It gives me more control over the activities in my life.
U5	It makes the things I want to accomplish easier to get done.
U6	It saves me time when I use it.
U7	It meets my needs.
U8	It does everything I would expect it to do.
	Ease of use
EU1	It is easy to use.
EU2	It is simple to use.

EU3	It is user friendly.
EU4	It requires the fewest steps possible to accomplish what I want to do with it.
EU5	It is flexible.
EU6	Using it is effortless.
EU7	I can use it without written instructions.
EU8	I don't notice any inconsistencies as I use it.
EU9	Both occasional and regular users would like it.
EU10	I can recover from mistakes quickly and easily.
EU11	I can use it successfully every time.
	Ease of learning
EL1	I learned to use it quickly.
EL2	I easily remember how to use it.
EL3	It is easy to learn to use it.
EL4	I quickly became skilful with it.
	Satisfaction
S1	I am satisfied with it.
S2	I would recommend it to a friend.
S3	It is fun to use.
S4	It works the way I want it to work.
S5	It is wonderful.
S6	I feel I need to have it.
S7	It is pleasant to use.

USE questionnaire respondents were given the questionnaire that had total of 30 items from USE questionnaire framework. Questionnaire framework is combined with 5-point Likert scale. Table 4 explains the criteria in the USE questionnaire.

Formula 1 to formula 4 is Sturges formula that used to process the questionnaire results and get the OVO application assessment conclusion against usefulness, ease of use, ease of learning, and satisfaction.

$$\text{Highest score} = \text{HLS} \times \text{SN} \times \text{RN} \quad (1)$$

In formula 1, HLS is the highest Likert score, there is 5. SN is the number of statements for each parameter. RN is the number of respondents.

$$\text{Lowest score} = \text{LLS} \times \text{SN} \times \text{RN} \quad (2)$$

In formula 2, LLS is the lowest Likert score, there is 1. SN is the number of statements for each parameter. RN is the number of respondents.

$$\text{Range} = \text{Highest score} - \text{Lowest score} \quad (3)$$

In formula 3, range obtained by calculate the highest score minus the lowest score.

$$\text{Interval} = \frac{\text{Range}}{\text{Class}} \quad (4)$$

In formula 4, interval obtained by calculate the range divided by class. In this research, value of class is 5 because there are 5 categories namely very good, good, enough, bad, and very bad.

IV. RESULTS AND DISCUSSION

IV.I. Success Rate

Table 5. Success Rate

Respondents	Task 1	Task 2
R1	Success	Partial
R2	Success	Success
R3	Partial	Success
R4	Success	Partial
R5	Success	Success
R6	Success	Success
R7	Success	Success
R8	Success	Partial
R9	Partial	Success

Table 5 explains task testing results by usability testing respondents. Success rate calculation can be done by formula 5.

$$\text{Success Rate} = \frac{\text{Success Task} + (\text{Partial Success} \times \text{Percentage})}{\text{Total Task} \times \text{Total Users}} \times 100 \quad (5)$$

From the calculation, success rate that obtained is 86%.

IV.II. Time Based Efficiency

Table 6. Completion Time

Respondents	Task1 / seconds	Task2 / seconds
R1	27	21
R2	19	21
R3	24	28
R4	17	16
R5	38	35
R6	28	22
R7	26	27
R8	28	27
R9	21	23

Table 6 explains completion time of tasks that performed by usability testing respondents. Time based efficiency can be done by formula 6. There is notation explanation in time based efficiency formula. N for number of tasks. R for number of users. Next is n_{ij} for task i results by user j . If users successfully complete the task, then $n_{ij} = 1$, if not then $n_{ij} = 0$. Next is t_{ij} for time that required by user j to complete the task i . If task cannot be completed, then the time is measured until user fails to complete the task.

$$\text{Time Based Efficiency} = \frac{\sum_{j=1}^R \sum_{i=1}^N \frac{n_{ij}}{t_{ij}}}{NR} \quad (6)$$

After the calculation process, time based efficiency that obtained is 0.03 goals / sec.

IV.III. Usability Interview

Table 7 explains about usability complaints that given by usability testing respondents.

Table 7. Usability Issues from Interview

Problem Code	Description	Respondents
P01	Notification details if payment failed is unclear.	R1
P02	There is no information notification if phone credits has entered or not.	R2
P03	Failed to top up at post-paid number.	R3
P04	OVO application does not provide pop up notifications for phone credits purchasing information.	R4
P05	Password code and fingerprint are displayed together when respondent want to log in to OVO application.	R5
P06	Home screen icon does not match with menu label that displayed.	R6
P07	Phone credits choice is not consistent in some operators.	R7
P08	Phone credits nominal selection display is less on point.	R8
P09	Restricted actions to refresh the purchase status page when successfully making a payment.	R9

IV.IV. USE Questionnaire Parameter Measurement

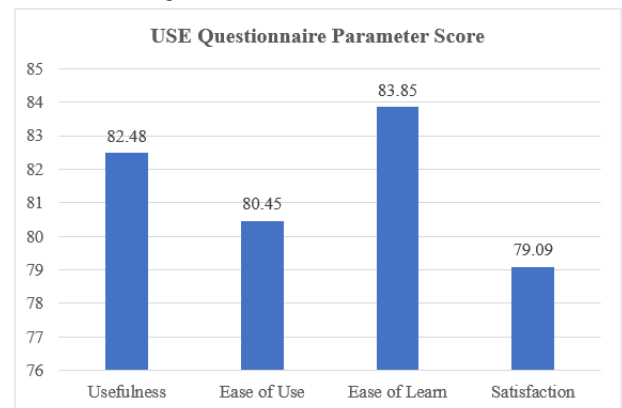


Figure 2. USE questionnaire parameter score comparison

There are 4 parameters that tested, there are usefulness, ease of use, ease of learning, and satisfaction. From data that collected through USE questionnaire, the comparison of parameter score can be calculated by formula 7.

$$\text{Parameter scale} = \frac{\text{SUM}}{(\text{Respondent Total} \times \text{Statement Total} \times \text{Likert Scale})} \times 100 \quad (7)$$

Figure 2 explains comparison of parameter score from USE questionnaire. Usefulness parameter has score of

82.48. Ease of use parameter has score of 80.45. Ease of learning parameter has score of 83.85. Satisfaction parameter has score of 79.09. To determine usability value of OVO electronic wallet applications, it is necessary to calculate all parameters by formula 8.

$$\text{Score} = \frac{(\text{Usefulness} + \text{Ease of Use} + \text{Ease of Learning} + \text{Satisfaction})}{4} \quad (8)$$

Then usability calculation result is 81.46%.

IV.V. Usefulness Parameter

Usefulness parameter has 8 statements. Based on USE questionnaire that has been returned by 100 respondents, points that owned by usefulness parameter is 3299. Using the Sturges formula, maximum value is 4000, minimum value is 800, data range value is 3200, and interval value is 640.

Table 8. Usefulness Interval and Category

Interval	Category
3360 – 4000	Very good
2780 – 3359	Good
2080 – 2719	Enough
1440 – 2079	Bad
800 – 1439	Very bad

Based on Table 8, if number of points that owned by usefulness parameter is 3299, then OVO electronic wallet application can be categorized as "Good" in terms of usefulness.

IV.VI. Ease of Use Parameter

Ease of use parameter has 11 statements. Based on USE questionnaire that has been returned by 100 respondents, points that owned by ease of use parameter is 4425. Using the Sturges formula, maximum value is 5500, minimum value is 1100, data range value is 4400, and interval value is 880.

Table 9. Ease of Use Interval and Category

Interval	Category
4620 – 5500	Very good
3740 – 4619	Good
2860 – 3739	Enough
1980 – 2859	Bad
1100 – 1979	Very bad

Based on Table 9, if number of points owned by ease of use parameter is 4425, then OVO electronic wallet application can be categorized as "Good" in terms of ease of use.

IV.VII. Ease of Learning Parameter

Ease of learning parameter has 4 statements. Based on USE questionnaire that has been returned by 100

respondents, points that owned by ease of learning parameter is 1677. Using the Sturges formula, maximum value is 2000, minimum value is 400, data range value is 1600, and interval value is 320.

Table 10. Ease of Learning Interval and Category

Interval	Category
1680 – 2000	Very good
1360 – 1679	Good
1040 – 1359	Enough
720 – 1039	Bad
400 – 719	Very bad

Based on Table 10, if number of points owned by ease of learning parameter is 1677, OVO electronic wallet application can be categorized as "Good" in terms of ease of learning.

IV.VIII. Satisfaction Parameter

Satisfaction parameter has 7 statements. Based on USE questionnaire that has been returned by 100 respondents, points that owned by satisfaction parameter is 2768. Using the Sturges formula, maximum value is 3500, minimum value is 700, data range value is 2800, and interval value is 560.

Table 11. Satisfaction Interval and Category

Interval	Category
2940 – 3500	Very good
2380 – 2939	Good
1820 – 2379	Enough
1260 – 1819	Bad
700 – 1259	Very bad

Based on Table 11, if number of points that owned by satisfaction parameter is 2768, then OVO electronic wallet application can be categorized "good" in terms of satisfaction.

V. CONCLUSION AND FUTURE SCOPE

Research on usability evaluation OVO electronic wallet application using usability testing and usefulness, satisfaction, and ease of use questionnaire has been successfully carried out. Usability testing was done by provided tasks scenario and interviews. Number of respondents who participated in usability testing was 9 people and number of respondents who participated in USE questionnaire was 100 people.

Data processing in task scenario analysis produces success rate of 86%, and time based efficiency value of 0.03 goals/sec. Interviews result concluded that OVO application did not provide purchase and payment pop-up notification, then ineffective login method, and problems with consistency of elements layout on user interface.

OVO usability value according to USE questionnaire results was 81.46%. OVO electronic wallet application is classified as "good" category on usefulness, ease of use, ease of learning, and satisfaction parameter. Usefulness parameter has point of 3299. Ease of use parameter has point of 4425. Ease of learning parameter has point of 1677. Satisfied parameter has point of 2768.

This research has limitation, there is does not provide a recommendations design for improving UI (User interface) and UX (User experience) of OVO electronic wallet application, so for the suggestions that can be given for further research are to make recommendations design for improved user experience based on evaluation results.

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