User Experience Analysis of MyPertamina Application Using User Experience Questionnaire (UEQ) and System Usability Scale (SUS)

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Abstract—MyPertamina is a digital wallet application developed by PT Pertamina (Persero) to facilitate cashless fuel payments and offer loyalty programs. Despite exceeding 10 million downloads, the application received a 3.3 rating on Google Play Store as of May 2023, indicating user complaints. This study analyzes the user experience of the MyPertamina application using the User Experience Questionnaire (UEQ) and System Usability Scale (SUS). Respondents were active users selected purposively through online questionnaires. The study results show all UEQ dimensions scored within the neutral range, with the highest score on Perspicuity (mean 0.453) and the lowest on Novelty (mean -0.068). SUS measurements place the application in the Marginal Low category under acceptability ranges and grade D in the grade scale, indicating significant room for improvement. However, the application received a ”Good” rating in the adjective rating category, reflecting its utility despite suboptimal performance. In conclusion, the MyPertamina application requires enhancements to meet user expectations and improve overall user experience

Keywords— MyPertamina, User Experience, Usability, UEQ, SUS

I. INTRODUCTION

The development of financial technology (fintech) has changed the way people make transactions, with trends shifting from manual to non-cash payments[1]. One of the state-owned companies that launched fintech services is PT Pertamina (Persero) by developing a digital wallet product called MyPertamina which is connected to Link-Aja[2]. MyPertamina is a cashless payment method that also allows consumers to earn points and discounts at stores that work with PT Pertamina through the MyPertamina loyalty program. MyPertamina is also intended to regulate the purchase of subsidized fuels such as diesel and pertalite in order to meet the target target and distribution of fuels enacted since July 1, 2022 by PT Pertamina Niaga[3].

Based on the Google Play Store, the total downloads of the MyPertamina application exceeded 10 million times until 2022, but until May 2023, the MyPertamina application only received a rating of 3.3 stars out of a total rating of 5.0 with a total of 329,000 reviews[4]. Based on the value obtained on the Google Play Store that there are indications of a poor level of satisfaction and user experience, this is supported by the results of the analysis of the positive category MyPertamina application user review opinions in Indonesia, which amounted to 299 while the negative category opinion results were 501 which included complaints[5]. Therefore, it is necessary to measure user experience in order to determine the level of satisfaction of MyPertamina application users.

A product is declared successful if the product can meet user needs which will lead to user satisfaction. One way to find out user needs is with user experience[6]. User Experience measures how comfortable and satisfied users are with products, systems, and

services based on appearance, accessibility, interface functionality, and support from previous experiences. User Experience combines feelings, beliefs, preferences, perceptions, physical and psychological reactions, behaviors and achievements before, during and after using a product. There are several methods of measuring user experience, one of which is the User Experience Questionnaire (UEQ).

UEQ is a questionnaire used to measure the level of user experience of a product personally[7]. The parameters in the UEQ questionnaire are designed to fulfill a comprehensive understanding of the user experience. The UEQ questionnaire is designed to be able to obtain direct answers to express feelings, impressions, and attitudes when using the product. In addition to measuring user experience, it is also necessary to measure usability to measure how much the application is feasible by users using the System Usability Scale method.

Usability is a quality attribute that assesses how easy a user interface is to use. Usability can be said to be a method for holding the principle of ease of use when carrying out the design process[8]. SUS is a short and crude assessment method that meets the need for a concise yet reliable questionnaire. The main focus of SUS is to provide questionnaires quickly after testing new software or hardware. Considering 25 questions is too much because often users feel tired or annoyed before the survey starts. SUS was designed as a quick and easy-to-use evaluation tool to collect short and accurate responses after software or hardware testing has taken place[9].

Both methods, UEQ and SUS, are often used in research because they share similar characteristics, making them particularly suitable for application in studies that focus on user experience and usability. Although each method has a slightly different focus and approach, the attributes shared by UEQ and SUS can complement each other[10]. For example, UEQ emphasizes more on the emotional aspects and user perceptions of the product or service, while SUS focuses more on the usability and ease-of-use aspects. Using these two methods together allows researchers to not only understand how a system or application is perceived by users, but also how effectively and efficiently users can interact with the system.

The combination of SUS and UEQ is often used in research to evaluate usability and user experience. The study by Surahman, Widiyasono, and Gunawan (2021) applied this method to an online health consultation application. SUS assesses usability, such as ease and efficiency, while UEQ evaluates users' perceptions and emotional quality. This approach provides a deeper understanding, improves the accuracy and reliability of research results, and reveals the effectiveness and efficiency of user interaction with the system[11].

Research on MyPertamina application user experience and satisfaction has been done before. Ramadhan et al. (2023) used the UEQ method to analyze user experience and found that the application has a positive value on several UX variables, although there are shortcomings in perspicuity and dependability[4]. Meanwhile, Hasanah et al. (2023) used the EUCS method to evaluate user satisfaction and found that factors such as content and ease of use had a significant influence[12]. However, these two studies have limitations, namely the use of a single method without considering usability aspects that are important for understanding the efficiency and comfort of users in using the application.

Until now, there has been no research that combines the UEQ and SUS methods to holistically evaluate the experience and usability of the MyPertamina application. This combination is important because it provides a comprehensive analysis, covering both the subjective user experience and usability evaluation quantitatively. In addition, previous studies were limited to a specific population, such as Jabodetabek, so the results cannot be widely generalized.

This study aims to fill the gap by combining UEQ and SUS methods in evaluating the MyPertamina app. This study also involves respondents from various regions in Indonesia to ensure more representative results.

II. STUDY LITERATURE

A. MyPertamina

Applications are programs designed to perform prioritized tasks to meet user needs. Furthermore, an application can also be interpreted as a program that performs an input that becomes an output through the use of rules and guidelines designed to work effectively[13]. Applications are components that are useful as a means for data processing or other activities such as creating or processing documents or files[14].

The application issued by PT Pertamina is known as MyPertamina. MyPertamina collaborates with LinkAja to conduct epayment transactions. In addition to functioning as a transaction platform, MyPertamina also provides opportunities for consumers to get prizes and vouchers that can be used to get benefits when transacting at various Pertamina gas stations. The MyPertamina application can be downloaded through the Google Play Store or App Store for Android and iOS users[15].

B. User Experience

User Experience measures how comfortable and satisfied users are with products, systems, and services based on appearance, accessibility, interface functionality, and support from previous experiences. User Experience combines feelings, beliefs, preferences, perceptions, physical and psychological reactions, behaviors and achievements before, during and after using a product[16].

C. User Experience Quesionnaire (UEQ)

The measurement of the overall user experience of mobile applications is assessed using the User Experience Questionnaire (UEQ). UEQ was originally developed as a quick evaluation instrument for interactive product user experience[17].

Figure 1. below displays the aspects of UEQ assessment in research[7].

	1	2	3	4	5	6	7		
annoying	O	O	O	O	O	O	O	enjoyable	1
not understandable	O	O	O	O	O	O	O	understandable	2
creative	O	O	O	O	O	O	O	dull	3
easy to learn	O	O	O	O	O	O	O	difficult to learn	4
valuable	O	O	O	O	O	O	O	inferior	5
boring	O	O	O	O	O	O	O	exciting	6
not interesting	O	O	O	O	O	O	O	interesting	7
unpredictable	O	O	O	O	O	O	O	predictable	8
fast	O	O	O	O	O	O	O	slow	9
inventive	O	O	O	O	O	O	O	conventional	10
obstructive	O	O	O	O	O	O	O	supportive	11
good	O	O	O	O	O	O	O	bad	12
complicated	O	O	O	O	O	O	O	easy	13
unlikable	O	O	O	O	O	O	O	pleasing	14
usual	O	O	O	O	O	O	O	leading edge	15
unpleasant	O	O	O	O	O	O	O	pleasant	16
secure	O	O	O	O	O	O	O	not secure	17
motivating	O	O	O	O	O	O	O	demotivating	18
meets expectations	O	O	O	O	O	O	O	does not meet expectations	19
inefficient	O	O	O	O	O	O	O	efficient	20
clear	O	O	O	O	O	O	O	confusing	21
impractical	O	O	O	O	O	O	O	practical	22
organized	O	O	O	O	O	O	O	cluttered	23
attractive	O	O	O	O	O	O	O	unattractive	24
friendly	O	O	O	O	O	O	O	unfriendly	25
conservative	O	O	O	O	O	O	O	innovative	26

Figure 1. UEQ Items

D. UEQ Data Analysis Tool

Dr. Martin Schrepp developed a special tool that can be used to analyze the results of the UEQ questionnaire, namely the UEQ Data Analysis Tool. The UEQ Data Analysis Tool is an Excel application that can be obtained by downloading it directly from the official UEQ website. The way to use it is by entering data from respondents into the data tab on the Excel Worksheet[18].

E. Usability

Usability is a quality attribute that assesses how easy the user interface is to use. Usability can be said to be a method for holding the principle of ease of use when carrying out the design process[8].

Meanwhile, usability or usable can generally be interpreted as being able to be used properly. A product can be called useful if it can reduce or minimize user interference and bring benefits and satisfaction to users. To be usable, a service must be usefulness, efficiency, effectiveness, satisfaction, learnability, and accessibility[19].

F. System Usability Scale (SUS)

SUS is a short and crude assessment method that fulfills the need for a concise yet reliable questionnaire. The main focus of SUS is to provide questionnaires quickly after testing new software or hardware. Considering 25 questions is too many because often users feel tired or annoyed before the survey starts. Developed by Brooke (1996), SUS was designed as a quick and easy-to-use evaluation tool to collect short, accurate responses after software or hardware testing has taken place[9].

III. METHODOLOGY

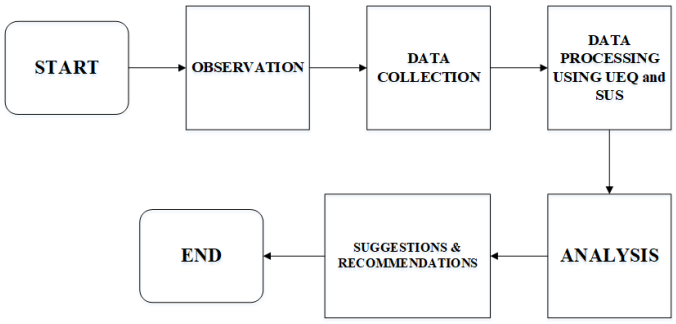

Figure 2. Methodology Flow

Based on Figure 2 this research uses a quantitative approach to analyze the user experience of the MyPertamina application by utilizing the User Experience Questionnaire (UEQ) and System Usability Scale (SUS) methods. The research respondents were active users of MyPertamina, who were selected using purposive sampling technique. Active users are defined as individuals who have used the application in a period of less than one year to more than one year. Data was collected through an online questionnaire distributed using Google Forms.

The UEQ is used to evaluate six dimensions of user experience: attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty. It can be seen in Table 1 below[20].

Table 1.
UEQ items for each variable

Variables	Items		Code
Attractiveness	Annoying	Enjoyable	ATT1
	Good	Bad	ATT2
	Unlikeable	Pleasing	ATT3
	Unpleasant	Pleasant	ATT4

	Attractive	Unattractive	ATT5
	Unfriendly	Friendly	ATT6
Perspicuity	Not Understandable	Understandable	PER1
	Difficult to learn	Easy to Learn	PER2
	Complicated	Easy	PER3
	Confusing	Clear	PER4
Efficiency	Slow	Fast	EFF1
	Ineffcient	Efficient	EFF2
	Impractical	Practical	EFF3
	Cluttered	Organized	EFF4
Dependability	Unpredictable	Predictable	DEP1
	Obstructive	Supportive	DEP2
	Not secure	Secure	DEP3
	Does not meet expectations	Meet expectations	DEP4
Stimulation	Inferior	Valueable	STI1
	Boring	Exciting	STI2
	Not Interesting	Interesting	STI3
	Demotivating	Motivating	STI4
Novelty	Dull	Creative	NOV1
	Conventional	Inventive	NOV2
	Usual	Leading Edge	NOV3
	Conservative	Innovative	NOV4

Meanwhile, SUS measures the usability of the application through 10 questions on a 5-point Likert scale with a total score in the range of 0-100. The collected data was analyzed using UEQ Data Analysis Tool to calculate the average score of each dimension and SUS calculation to identify acceptability ranges, grade scale, and adjective rating. The results of this study provide an overall picture of the experience and usability of the MyPertamina application, which is used to develop recommendations for improvement[21].

IV. RESULT AND DISCUSSION

This study aims to evaluate the user experience of the MyPertamina application using the User Experience Questionnaire (UEQ) and System Usability Scale (SUS) methods. A total of 100 respondents who are active users of the MyPertamina application in Indonesia were involved in this study. The characteristics of respondents consisted of 45% men and 55% women, with a variety of ages and types of vehicles.

A. UEQ Calculation

Processing and analyzing questionnaire data in this study was carried out using a special tool provided by the UEQ method, namely the UEQ Data Analysis Tool version 12. Through this tool, questionnaire data collected from respondents can be processed efficiently and the results can be extracted more accurately.

Once the questionnaire data is inputted into the tool on the data tab, it automatically performs the necessary transformations and calculations to analyze each measured variable, such as attractiveness, efficiency, accuracy, stimulation, novelty, and clarity.

From these calculations, the mean, variance, and standard deviation for the 26 UEQ question items will be generated. The mean value of each UEQ aspect has a standardized value based on Table 2 below:

Table 2.
Average Rating Scale.

Mean Value Range	Description
>0,8	Positive Evaluation
Between -0.8 and 0.8	Neutral Evaluation
<-0,8	Negative Evaluation

The following are the results of the questionnaire on each research variable which are analyzed to determine the average respondent's answer to each variable.

Table 3.
Evaluation of Attractiveness Variables

Code	Items		Mean	Assessment Evaluation
ATT1	Annoying	Enjoyable	1,3	Positive Evaluation
ATT2	Good	Bad	-0,6	Neutral Evaluation
ATT3	Unlikeable	Pleasing	1,1	Positive Evaluation
ATT4	Unpleasant	Pleasant	1,4	Positive Evaluation
ATT5	Attractive	Unattractive	-0,7	Neutral Evaluation
ATT6	Unfriendly	Friendly	-0,4	Neutral Evaluation
Attractiveness			**0,347**	**Neutral**

Base on Table 3. the Attractiveness variable measures users' overall impression of the MyPertamina application, namely whether they like or dislike the application. Based on the evaluation results, this variable gets a neutral value with an average score of 0.347. Three items, namely ATT1, ATT3, and ATT4, received positive ratings, while the other three items, namely ATT2, ATT5, and ATT6, received neutral ratings. Overall, users think that the MyPertamina app is quite good and interesting.

Table 4.
Evaluation of Perspicuity Variables

Code	Items		Mean	Assessment Evaluation
PER1	Not Understandable	Understandable	1,6	Positive Evaluation
PER2	Difficult to learn	Easy to Learn	-0,7	Neutral Evaluation
PER3	Complicated	Easy	1,4	Positive Evaluation
PER4	Confusing	Clear	-0,5	Neutral Evaluation
Perspicuity			**0,453**	**Neutral**

Base on Table 4. the Perspicuity variable measures how easily users understand how to use the MyPertamina application, including how quickly they can learn and get used to the application. Based on the evaluation results, this variable gets a neutral value with an average score of 0.453. Two items, namely PER1 and PER3, received a positive assessment, while PER2 and PER4 received a neutral assessment.

Table 5.
Evaluation of Efficiency Variables

Code	Items		Mean	Assessment Evaluation
EFF1	Slow	Fast	-0,7	Neutral Evaluation
EFF2	Ineffcient	Efficient	1,2	Positive Evaluation
EFF3	Impractical	Practical	1,1	Positive Evaluation

EFF4	Cluttered	Organized	0,4	Neutral Evaluation
Efficiency			**0,318**	**Netral**

Base on Table 5. the Efficiency variable measures how quickly and efficiently the MyPertamina application helps users complete tasks. Based on the evaluation results, items EFF1 and EFF4 received a neutral assessment, while items EFF2 and EFF3 received a positive assessment. Overall, the Efficiency variable has a neutral value with an average score of 0.318.

Table 6.
Evaluation of Dependability Variables

Code	Items		Mean	Assessment Evaluation
DEP1	Unpredictable	Predictable	1,1	Positive Evaluation
DEP2	Obstructive	Supportive	1,2	Positive Evaluation
DEP3	Not secure	Secure	-1,1	Negative Evaluation
DEP4	Does not meet expectations	Meet expectations	-0,7	Neutral Evaluation
Dependability			**0,138**	**Netral**

The Dependability variable focuses on the extent to which users feel a level of control and security when using the MyPertamina application. This aspect is important because it reflects user confidence in the system in maintaining data integrity and providing reliable services. Based on the analysis results presented in Table 6, the Dependability variable gets an evaluation that tends to be neutral with an average value (mean) of 0.138.

Table 7.
Evaluation of Stimulation Variables

Code	Items		Mean	Assessment Evaluation
STI1	Inferior	Valueable	-0,7	Neutral Evaluation
STI2	Boring	Exciting	1,2	Positive Evaluation
STI3	Not Interesting	Interesting	-1,4	Positive Evaluation
STI4	Demotivating	Motivating	-0,7	Neutral Evaluation
Stimulation			**0,290**	**Netral**

Stimulation variable is a user experience variable that emphasizes the level of motivation and pleasure of users in using the MyPertamina application. The evaluation results in Table 7 show that overall the Stimulation variable obtained a neutral evaluation value with a mean value of 0.290. Items STI1 and STI4 obtained neutral evaluation values while items STI3 and STI3 obtained positive evaluation values.

Table 8.
Evaluation of Novelty Variables

Code	Items		Mean	Assessment Evaluation
NOV1	Dull	Creative	-1,0	Negative Evaluation
NOV2	Conventional	Inventive	-1,0	Negative Evaluation
NOV3	Usual	Leading Edge	0,8	Positive Evaluation
NOV4	Conservative	Innovative	0,9	Positive Evaluation
Novelty			**-0,068**	**Netral**

Novelty variable is a user experience variable that measures how innovative and creative the MyPertamina application is and attracts interest from users. Based on the evaluation results in Table 8, overall the Novelty variable only gets a neutral evaluation value with a mean value of -0.068.

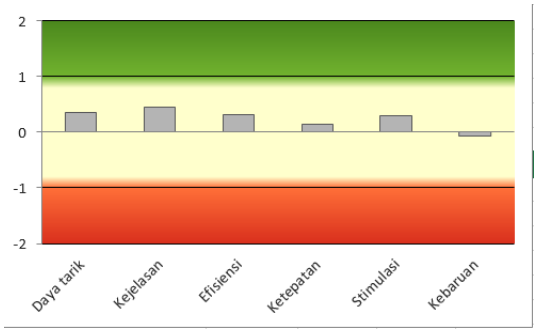

Figure 3. Mean Diagram of each UEQ Variable

Figure 3 shows the results of the evaluation of the user experience of the MyPertamina application using UEQ showing the mean value for each measurement variable obtained from 100 respondents who filled out the questionnaire.

From the data collected, the variables of Attractiveness, Efficiency, Dependability, Stimulation, and Novelty obtained mean values ranging from -0.8 to 0.8. This value indicates that all six variables are at a neutral evaluation level. This means that, in general, users do not show a very positive or very negative assessment of these aspects. These results indicate that although the MyPertamina app has acceptable features, there is still room for improvement to enhance the appeal and clearer functionality in each of these variables.

Meanwhile, the Novelty variable obtained a mean value of -0.068, which is at the lowest neutral evaluation level compared to the other five variables. This shows that users feel that the MyPertamina application does not give an innovative impression or present a prominent new experience. In other words, the existing features tend to be considered ordinary or do not have significant updates.

After obtaining the mean value of each variable, the mean value is then compared to the benchmark data set. Comparison of the values obtained with the data in the benchmark is done to see the relative quality of the MyPertamina application when compared to other products. The benchmark results can be seen in Figure 4.

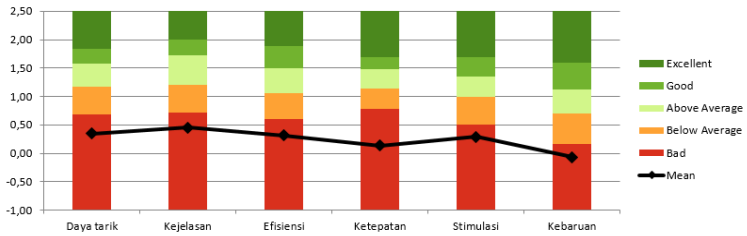

Figure 4. UEQ Benchmark Diagram of MyPertamina app

Based on Figure 4, it can be seen that when compared to other products, the MyPertamina application gets a Bad score for each variable. This indicates that the MyPertamina application needs improvement in every aspect.

B. SUS Calculating

To find out whether the MyPertamina application is acceptable or not is the benefit of conducting usability experiments. In the research conducted to understand the

effectiveness, efficiency and user satisfaction in the MyPertamina application that a usability test will be conducted. The SUS method contains a questionnaire that has 10 questions on the questionnaire. In the questionnaire there are five Likert scales. Then the questionnaire filler chooses from the five namely "Strongly Disagree, 'Disagree', 'Moderately', 'Agree', 'Strongly Agree' on the 10 questions.

Table 9.
SUS Calculating

Respondents	Calculated Score										Total	Value
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10		
1	3	3	2	3	2	3	2	2	2	2	24	60
2	2	2	2	1	1	2	1	3	3	3	20	50
3	2	1	1	2	1	1	2	2	2	2	16	40
4	1	3	2	3	1	3	1	2	1	3	20	50
...	...	...	...	...	...	...	...	...	...	...	...	...
100	3	0	3	0	3	0	4	2	2	1	18	45
Final Total Score												**5435**
Average Final Score												**54,35**

After knowing the final value base on Table 9. SUS score respondents is 5435 and the highest value is 100 while the lowest value is 33. Then calculate the SUS score to find the average of each respondent by adding up all the score results then dividing by the number of respondents, namely 100 people.

Evaluation of the SUS score value is done after getting a total of 100 respondents who have done data processing using the SUS formula which aims to get the level of usefulness of using the MyPertamina application. Furthermore, measuring the SUS score of MyPertamina application users obtained can be seen in Figure 4 and Table.

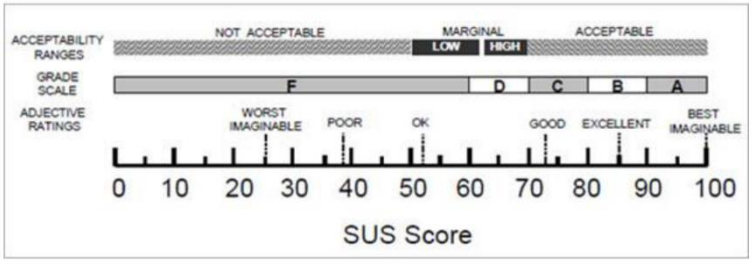

Figure 5. SUS Score

Table 10.
Rating Scale SUS Score

SUS Score	Grade	Description
Above 80.3	A	Very Good
Between 68 and 80.3	B	Good
68	C	Medium
Between 51 and 67	D	Bad
Below 51	F	Very Bad

Based on Figure 5 and Table 4.10, above, the results of the assessment to determine acceptability, grade scale, adjective rating, percentile rank are known, namely:

1. Based on the results of measuring acceptability ranges, the MyPertamina application is classified in the Marginal Low category, which indicates that the application is quite acceptable.
2. Based on the measurement of the grade scale, MyPertamina application is in grade D, which indicates that the quality of this application still needs to be improved.
3. Based on adjective rating measurement, MyPertamina application is in the Good category, which means that this application is considered useful by users.
4. Based on the percentile rank measurement, the MyPertamina application gets a letter grade D, which indicates that this application has not fully met user expectations.

C. Suggestions & Recommendations

Based on the results and conclusions above, there are several suggestions and recommendations that can be given for further development of the MyPertamina application. First, there needs to be an improvement on the aspects of attractiveness, clarity, efficiency, accuracy, and stimulation. Developers can consider introducing new, more innovative features, as well as improving existing functionality to make the application more attractive and efficient for users.

Secondly, in the Novelty aspect, two items, namely NOV1 (Creative, Dull) and NOV2 (Inventive, Conventional), received negative evaluations. Based on the average value (mean) obtained, further development efforts are needed to improve the quality of the MyPertamina application in these aspects, especially in creating more innovative and attractive features for users.

Then, improvements are also needed in terms of overall usability, given the results from SUS which show that this application is still in grade D. Thirdly, although the MyPertamina app has some strengths, such as clarity in navigation, there is still a lot of room for improvement that can enhance the overall user experience and make the app more in line with user expectations and needs.

Finally, developers should conduct further usability testing after improvements are made to ensure that the changes have a positive impact. By implementing these suggestions, it is hoped that the MyPertamina app can achieve a higher level of user experience and usability in the future.

V. CONCLUSION

The results of the user experience analysis of the MyPertamina application using the UEQ and SUS methods show some important things. Of the six aspects measured by UEQ, all of them get an average value that tends to be neutral. The aspect with the highest score is ease of understanding (0.453), while the lowest is novelty (-0.068). However, when compared to the scoring standard, all aspects fall into the category of “Bad”. This means that, in general, users do not show a very positive or very negative assessment of these aspects. These results indicate that although the MyPertamina app has acceptable features, there is still room for improvement to enhance the appeal and clearer functionality in each of these variables.

Meanwhile, measurement using SUS puts the app in the Marginal Low category, which means that user acceptance is quite good but still needs a lot of improvement. On the letter scale, the app received a D grade, indicating that its quality is still low. Even so, based on descriptive ratings, the app is considered “Good,” meaning users find the app useful, but not optimal.

Overall, the app's percentile rating is also at the D level, indicating that it has not met user expectations and needs improvement to provide a better experience and ease of use.

Researchers suggest that future research can include usability analysis with criteria that have not been used in this study, thus providing a broader perspective on the usability

of the MyPertamina application. In addition, it is also recommended to use other methods to examine different aspects of this application, so that it can support the development and progress of applications in various relevant aspects.

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