

1. Proofread document
2. Submitted: Jurnal RESTI (Rekayasa Sistem dan Teknologi Informasi)
3. Editor Decision : Our decision is: Revisions Required
4. Submitted: File Revisions
5. Editor Decision : Our decision is to: Accept Submission
6. Paper accepted for publication
7. Paper published:

# Submitted: Jurnal RESTI (Rekayasa Sistem dan Teknologi Informasi)

The screenshot shows the submission dashboard for the user 'All Ibrahim'. The page title is 'Assessing User Experience and Usability in the OVO Application: Utilizing the User Experience Questionnaire and System Usability Scale for Evaluation'. The dashboard includes a 'Submission Library' and 'View Metadata' link. Under 'Submission Files', there is one file named 'ronalw, 5137-.docx (2)' uploaded on June 7, 2023, with a 'Download All Files' button. The 'Pre-Review Discussions' section shows a discussion titled 'Confirmation' initiated by 'ronalw' on 2023-06-07 09:19 AM, with a reply from 'alibrahim' on 2023-06-23 06:36 AM. The discussion has 1 reply and is currently open.

The screenshot shows a Gmail notification email from 'Ronal Watrionthos' (ronal.watrionthos@gmail.com) to 'Kepada saya'. The subject is '[RESTI] New notification from Jurnal RESTI (Rekayasa Sistem dan Teknologi Informasi)'. The email content states: 'You have a new notification from Jurnal RESTI (Rekayasa Sistem dan Teknologi Informasi). You have been added to a discussion titled "Confirmation" regarding the submission "Assessing User Experience and Usability in the OVO Application: Utilizing the User Experience Questionnaire and System Usability Scale for Evaluation".' A link is provided: <https://jurnal.laili.or.id/index.php/RESTI/authorDashboard/submission/5137>. The sender is identified as 'Dr. Ir. Yuhfizar, S.Kom., M.Kom., IPM'. The email footer includes the journal name 'Jurnal RESTI (Rekayasa Sistem dan Teknologi Informasi)' and two buttons: 'Balas' and 'Teruskan'.

## Editor Decision : Our decision is: Revisions Required

The screenshot shows the author dashboard for a submission titled "Assessing User Experience and Usability in the OVO Application: Utilizing the User Experience Questionnaire and System Usability Scale for Evaluation" by Ali Ibrahim. The submission is currently in the "Review" stage. The "Round 1 Status" section indicates that the submission must be resubmitted for another review round. A notification from [RESTI] Editor Decision is dated 2023-07-11 09:34 PM. Under "Reviewer's Attachments", a document titled "17060-1\_5137-Article Text-16855-1-4-20230607.docx" is listed, dated June 25, 2023.

This screenshot shows the same dashboard as above, but with a notification window open. The notification is titled "[RESTI] Editor Decision" and is dated 2023-07-11 09:34 PM. The content of the notification reads: "Ali Ibrahim: We have reached a decision regarding your submission to Jurnal RESTI (Rekayasa Sistem dan Teknologi Informasi), 'Assessing User Experience and Usability in the OVO Application: Utilizing the User Experience Questionnaire and System Usability Scale for Evaluation'. Our decision is: Revisions Required". The contact information for the editor is provided: "Dr. Ir. Yuhefizar, S.Kom., M.Kom., IPM, Politeknik Negeri Padang, Phone +628126777956, jurnal@iati.or.id".

This screenshot shows the notification window from the previous image, but it has scrolled down to reveal a list of questions from Reviewer E. The questions are: "Apakah manuskrip ini merupakan kontribusi asli?", "Apakah judul manuskrip sudah sesuai dengan jurnal ini?", "Apakah abstrak sudah cukup informatif terutama bila dibaca secara terpisah, memberikan gambaran ringkas dari penelitian?", "Apakah uraian dalam manuskrip disajikan dengan jelas dan mudah dipahami?", and "Apakah analisis penulis cukup mendalam, terutama dalam sub bab pembahasan dan hasil?". The reviewer's recommendation is "Revisions Required".

Jurnal RESTI (Rekayasa Sistem dan Teknologi Informasi)

Assessing Use Alliteration

Submission: Round 1

Round 1 Star The submission

Notifications

RESTI Editor

Reviewer's

Ya

Apakah penggunaan gambar sudah tepat dan jelas terbaca ?

Ya

Apakah penalaran ilmiah, argumentasi dan interpretasi penulis memadai ?

Ya

Apakah referensi dari penelitian sebelumnya cukup memadai dijelaskan, terutama pada latar belakang penelitian ?

Tidak

Apakah gaya penulisannya sudah ilmiah serta bahasanya jelas dan benar?

Ya

Berikan komentar Anda terhadap manuskrip ini ?

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2023-07-11 09:34 PM

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Abstract

Advances in technology in the payment system have changed the role of cash used by the public to become more effective and efficient in non-cash payments. OVO has one of the largest user bases in Indonesia. However, the OVO application has the lowest rating compared to other digital wallet applications on Google Play Store and App Store. One of the common complaints expressed by users pertains to the user experience of the OVO application, which significantly affects their overall experience with the app. This study aims to evaluate the user experience of the OVO application using the User Experience Questionnaire and measuring usability using the System Usability Scale. The results of the benchmark six aspects of UEQ show that one aspect is included in the excellent category (efficiency (1.53)). These four aspects fall into the above-average category, namely the attractiveness aspect (1.56), the perspicuity aspect (1.67), the dependability aspect (1.33), and the stimulation aspect (1.16). However, one aspect is included in the below-average category, namely the novelty aspect (0.64), which needs improvement. Then the result of the SUS value obtained is 77.33, meaning that the Acceptability Ranges category was "Acceptable", the Grade Scale category was "C", and the Adjective Rating category was "Good". Overall, the evaluation results show that OVO applications are acceptable for digital wallet applications.

Keywords: digital wallet, user experience, usability, user experience questionnaire, system usability scale

1. Introduction

Today's modern transactions continue to shift from cash-based transactions to electronic-based transactions. Equal consciousness through Information and Communication Technology (ICT) has contributed significantly to the market transformation of their financial and operational businesses. The trend towards digitization and internet use has brought about significant changes in how the global economy operates. The emergence of various financial technology (FinTech) applications is enabling consumers to go beyond conventional cash-based payment systems. Digital payments are becoming the norm in people's daily lives. This rapid development in the financial sector led to the invention of many digital payment technologies, where payers and payees use digital applications to send and receive money. As such, payment systems are rapidly changing from coin and globally. In 2022, the growth of non-cash transactions was estimated to reach 1,045.5 billion USD with the highest growth in developing countries in Asia and the Middle East [2]. Digital wallets are now necessary for people to carry out their activities and meet their needs [3][4]. This positive trend must be followed by good user experience and application usability [5]. E-Wallet is an electronic service that functions to store data and is similar to mobile banking or internet banking services, but the depositor does not use a bank but a digital wallet. E-wallet applications in Indonesia include OVO, Dana, Shopee, and others [6]. OVO is an electronic wallet application in Indonesia that users have used since 2016. OVO offers easy payments for phone credit, data packages and insurance. Nevertheless, OVO got some negative reviews on Google Play and App Store. One of the

Author

Clear identification of the research gaps your study intends to fill, a brief but comprehensive overview of your research design, and a more accurate description of the practical implications.

Reply

Author

The introduction to your article presents a detailed overview of the shift from cash-based transactions to electronic transactions and the convenience of digital wallets in modern

Reply

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Competitive Programming Learning using User Experience Questionnaire and System Usability Scale". In this study, the measurement results were obtained on 6 UEQ scales, namely the attractiveness scale (1.27), perspicuity (0.85), efficiency (1.12), dependability (1.13), stimulation (1.35) and novelty (0.81). All scales get positive impressions, the SUS score is 75 [8].

Furthermore, research was conducted by Nina Setiyaningrum and Doni Hoesana Bangsalak entitled "The Comparison of Evaluation on User Experience and Usability of Mobile Banking Applications Using User Experience Questionnaire and System Usability Scale". In this study, the 6 UEQ scale measurements on four mobile banking applications received a positive impression on each scale except for BNI Mobile (Efficiency and Novelty) and Laju (Novelty), which received a neutral impression. SUS scores were obtained for the four mobile banking applications, namely BCA Mobile (72.62), OVO Mobile (71.47), BNI Mobile (71.49), and Laju (72.4) [5].

This study aims to evaluate the user experience and measure the usability of the OVO application. The user experience in the OVO application is evaluated using a user experience questionnaire by analyzing six scales or aspects, namely attractiveness, perspicuity, dependability, efficiency, stimulation, and novelty [9][10]. Meanwhile, to measure usability in the OVO application, the system usability scale is used by analyzing three categories: acceptability ranges, grade scales, and adjective ratings [11][12].

2. Research Methods

This study aims to assess and quantify the user experience and usability of the OVO application by employing the User Experience Questionnaire (UEQ) and System Usability Scale (SUS). The research methodology and process are illustrated in Figure 1.

A. Research Design

The research design is evaluative and descriptive, which aims to measure and explain the success of a particular product, program or activity so that conclusions can be drawn about its feasibility, relevance, effectiveness and efficiency.

B. Research Process

The research framework used as a reference in the research to be carried out is shown in Figure 1.

```

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    Start([Start]) --> Sampling[Sampling Techniques]
    Sampling --> DataCollection[Data Collection]
    DataCollection --> DataAnalysis[Data Analysis]
    DataAnalysis --> Conclusion[Conclusion]
    Conclusion --> Finish([Finish])
  
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Author

What is the research design of this article? This is only an explanation of "what is a research design".

Reply

**User Experience Questionnaire** is a questionnaire that provides an overview of the level of user satisfaction based on user experience. The User Experience Questionnaire has six scales with 26 statements. This scale includes attractiveness, perceptivity, dependability, efficiency, stimulation, and novelty. The user experience questionnaire has been tested in several cases to provide an overview of user satisfaction. It usually takes 3-5 minutes to read and complete the user experience questionnaire. One of the other advantages of the user experience questionnaire is the free availability of this questionnaire which is available in the Indonesian language version. User experience questionnaire data analysis was carried out using the

**Figure 1. Research Process**

This stage aims to determine the sample and sampling technique used during the study. The population that is the focus of this research are those who use the OVO application. This study uses the Logothetis formula to determine the number of samples with an unknown

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population [16]. Through the Logothetis formula, the number of samples to be taken is at least 100 respondents. The sampling technique used in this study is Non-Probability Sampling, namely Purposive Sampling, a sampling technique selected based on specific criteria that the researcher wants. The criteria used in this study are as follows:

- OVO application users.
- Located in Indonesia.
- Minimum age of 15 years.

**D. Data Collection**

At this stage, data collection was carried out from predetermined respondents. In this study, the instrument used was a questionnaire. The questionnaire will include questions about the respondent's identity, the general use of the OVO application, 26 user experience questionnaire statements, and ten system usability scale statements. At this stage, the questionnaire will be distributed indirectly or online. To OVO application users, questionnaires will be distributed via social media such as WhatsApp, Telegram, Twitter and Instagram. Questionnaires will be created and filled out using Google Forms. The dissemination was done from 9 February 2023 to 16 March 2023. The samples obtained during the deployment were 166 respondents, but 11 were not users of the OVO application, so the remaining 155 respondents.

The user experience questionnaire consists of 6 scales divided into 26 indicator questions, as shown in Table 1. The user experience questionnaire uses a 7-point semantic differential scale. Respondents were asked to assess from 1 to 7 on 26 UEQ indicator items according to their subjective assessment. The User Experience Questionnaire (UEQ) is used to measure user experience consisting of 26 question components covering aspects [17].

- Attractiveness  
The product should look attractive, enjoyable, friendly, and pleasant.
- Efficiency  
I should perform my tasks with the product fast.

The product should be innovative, inventive, and creatively designed.  
The components of the UEQ questions based on the aspects assessed are shown in Table 1.

**Table 1. UEQ Testing Instruments**

Scale	Indicator	Item	
Attractiveness	Inconvenient	Enjoyable	ATT1
	Good	Bare	ATT2
	Dull	Colorful	ATT3
	Uncomfortable	Comfortable	ATT4
Perceptivity	Attractive	Unattractive	ATP1
	User-friendly	User-unfriendly	ATP2
	Not understood	Hardly understood	PER1
	Easy understood	Single	PER2
Efficiency	Complex	Coaching	EFF1
	Clear	Efficient	EFF2
	Inefficient	Efficient	EFF3
	Imprecise	Organized	EFF4
Dependability	Unreliable	Reliable	DEP1
	Unsupportive	Supportive	DEP2
	Unsafe	Usable	DEP3
	Meet expectations	Not meeting expectations	DEP4
Stimulation	Bored	Engaging	STI1
	Tedious	Interesting	STI2
	Uninspiring	Stimulating	STI3
	Monotonous	Unmonotonous	STI4
Novelty	Conventional	Novel	NOV1
	Imitative	Original	NOV2
	Commonplace	Leading-edge	NOV3
	Conservative	Innovative	NOV4

**E. Data Analysis**

At this stage, data inconsistencies analysis, quantitative data analysis, demographic analysis, and descriptive statistical analysis of the data that has been obtained are carried out. The data obtained will be processed using IBM SPSS Statistics 25, UEQ Data Analysis Tool, and Microsoft Excel.

In analyzing data inconsistencies using the UEQ Data Analysis Tool Version 12. At this stage, the seriousness of the respondents was tested in answering the questionnaire and detecting suspicious data. If the critical value is  $> 2$  and the critical length value is  $> 15$ , this indicates an error in filling out the questionnaire, and it is better to delete the data.

In the analysis of quantitative data, a validity test and a reliability test will be carried out on the data that has been obtained. The validity test was carried out by looking at the Pearson correlation value of each indicator for each variable. In contrast, the reliability test was carried out by looking at Cronbach's alpha ( $\alpha$ ) value of each research variable.

In the analysis of demographic data, respondent data will be grouped based on gender, age, duration of use, and frequency of use. The data will then be represented as a chart or graph.

In the descriptive statistical analysis using UEQ Data Analysis Tool Version 12 and Microsoft Excel. The data presented in this descriptive statistical test shows data that can be seen from the mean, which is the

following are the rules for the average or mean rating scale in UEQ which can be seen in Table 3:

**Table 3. UEQ Mean Rating Scale**

Mean Value Range	Explanation
$> 0.8$	Positive Evaluation
$-0.8 - 0.8$	Neutral Evaluation
$< -0.8$	Negative Evaluation

If the mean value of an item is more significant than 0.8, then the item will enter into the positive evaluation category and, in the diagram, is in the green area. If the mean value of an item is between -0.8 to 0.8, then the item will fall into the normal or neutral evaluation category and, in the diagram, is in the yellow area. Meanwhile, if the mean value of an item is less than -0.8, then the item will enter into the negative evaluation category and, in the diagram, it is in the red area. Then several rules must be considered when calculating scores on questionnaire data using SUS:

- For every odd-numbered question (1, 3, 5, 7, 9), the score obtained from user responses will be reduced by 1.
 
$$\text{odd weight} = x_i - 1 \quad (1)$$
- Each even-numbered question (2, 4, 6, 8, 10) will have its final score calculated by subtracting the user's score from 5.
 
$$\text{even weight} = 5 - x_i \quad (2)$$
- The SUS score is obtained by summing up the scores of each question and then multiplying by 2.5.
 
$$\text{SUS Score} = (\text{odd weight} + \text{even weight}) \times 2.5 \quad (3)$$
- The scoring rules mentioned above apply to one respondent. For multiple respondents, the SUS

A mention of how you addressed any potential bias, particularly response and non-response bias common in online surveys, would make the methodology more robust. An explanation of how you handled incomplete or inappropriate responses would add depth to your data collection process and increase the validity of your study.

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- The scoring rules mentioned above apply to one respondent. For multiple respondents, the SUS

A brief discussion on how you mitigated any potential errors or bias in your data analysis, and how you handled any outliers or missing data, would make this section more robust.

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3. Results and Discussions

A. Analysis of Data Inconsistencies

The analysis of inconsistencies in the data is conducted using UEQ Data Analysis Tools, Version 12.

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Specifically on the Inconsistencies tab, Inconsistencies are utilized to assess respondents' seriousness in answering the questionnaire, determining whether they responded haphazardly or without seriousness, and detecting suspicious data. If the critical value is more significant than two and the critical length exceeds 15, it indicates errors in completing the questionnaire, and it is recommended to remove such data.

Table 4. Inconsistencies Data

Item	The calculated value	The tabulated r value	Description
EFF1	0.447	0.361	Valid
EFF2	0.713	0.361	Valid
EFF3	0.674	0.361	Valid
EFF4	0.660	0.361	Valid

Table 6 shows that all items in the perspicuity scale are considered valid as the calculated r values are more significant than the tabulated r value.

Figure 5. SUS Score Value [20]

Figure 6. Acceptability Range

Author

The approach of analyzing data inconsistencies using the UEQ Data Analysis Tools Version 12 is a valuable step that ensures the reliability of the responses. By setting critical value parameters, you enhance the credibility of your results, filtering out potentially careless or insincere responses. This rigorous step adds to the methodological strength of your study, emphasizing the importance of accurate, thoughtful input from respondents for reliable, insightful conclusions.

Reply

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4. Conclusion

The user experience and usability evaluation using the User Experience Questionnaire (UEQ) and System Usability Scale (SUS) has been successfully conducted, involving 148 competent respondents who assessed the application.

Figure 5. SUS Score Value [20]

Figure 6. Acceptability Range

Author

Overall, these recommendations are well-considered and likely to effectively address the issues identified in the user experience evaluation.

Reply

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5. Conclusion

It might be helpful to restate the research objective at the beginning of the conclusion section to immediately remind readers of what the study sought to achieve, thus making it easier for them to assess whether or not the research objectives were met.

It would be also beneficial to end the conclusion with a general summary statement reflecting the overall performance of the OVO application based on the research findings, creating a more rounded conclusion.

Author

Reply

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application based on gender, age, duration of usage, and frequency of usage. The benchmark results for the six aspects of UEQ show that one aspect, efficiency, falls into the "good" category with a mean value of 1.55. Additionally, four aspects, namely attractiveness (mean: 1.56), perspicuity (mean: 1.67), dependability (mean: 1.33), and stimulation (mean: 1.16), are classified as "above average" categories. However, one aspect, novelty, falls into the "below average" category with a mean value of 0.64. Regarding the measurement of OVO application usability using the System Usability Scale (SUS) method, the obtained score is

[1] <https://doi.org/10.26438/chem.1010.16>  
O. E. Supena, R. Rahmi, Shalwa, and Rana Nurmalika, "Evaluation of User Experience TLX Training Data for Competence Programmers Learning Using User Experience Questionnaire and System Usability Scale," *Int. J. Sci. Technol.*, vol. 11, no. 2, pp. 10-17, 2022, doi: 10.26127/ijst.v11i2.142.

[2] B. Leuter, T. Feld, and M. Schreyer, "Construction and Evaluation of a User Experience Questionnaire," *ICU Usability Educ. Worksh.*, no. 209, pp. 65-78, 2006, doi: 10.1007/978-3-540-58950-9\_6.

[10] B. B. Santoso, M. Schreyer, G. Yusa Kartono, I. A. Y. Utomo, and B. Priyoga, "Measuring user experience of the mobile-assisted E-learning environment," *J. Educ. Online*, vol. 11, no. 1, pp. 1-79, 2016.

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## Assessing User Experience and Usability in the OVO Application: Utilizing the User Experience Questionnaire and System Usability Scale for Evaluation

### Abstract

Advances in technology in the payment system have changed the role of cash used by the public to become more effective and efficient in non-cash payments. OVO has one of the largest user bases in Indonesia. However, the OVO application has the lowest rating compared to other digital wallet applications on Google Play Store and App Store. OVO receives numerous negative reviews on both Google Play Store and App Store. One of the common complaints expressed by users pertains to the user experience of the OVO application, which significantly affects their overall experience with the app. This study aims to evaluate the user experience of the OVO application using the User Experience Questionnaire and measuring usability using the System Usability Scale. The results of the benchmark six aspects of UEQ show that one aspect is included in the excellent category: efficiency (1.55). Then four aspects fall into the above-average category, namely the attractiveness aspect (1.56), the perspicuity aspect (1.67), the dependability aspect (1.33), and the stimulation aspect (1.16). However, one aspect is included in the below-average category, namely the novelty aspect (0.64), which needs improvement. Then the result of the SUS value obtained is 77.53, meaning that the Acceptability Ranges category was "Acceptable", the Grade Scale category was "C", and the Adjective Rating category was "Good". Overall, the evaluation results show that OVO applications are acceptable for digital wallet applications.

**Keywords:** digital wallet, user experience, usability, user experience questionnaire, system usability scale

### 1. Introduction

Today's modern transactions continue to shift from cash-based transactions to electronic-based transactions. Equal connectedness through Information and Communication Technology (ICT) has contributed significantly to the market transformation of their financial and operational businesses. The trend towards digitization and internet use has brought about significant changes in how the global economy operates. The emergence of various financial technology (FinTech) applications is enabling consumers to go beyond conventional cash-based payment systems. Digital payments are becoming the norm in people's daily lives. This rapid development in the financial sector led to the invention of many digital payment technologies, where payers and payees use digital applications to send and receive money. As such, payment systems are rapidly changing from coin and paper-based cash to convenient, fast and cost-effective forms of digital payments [1]. The development of non-cash transactions is expected to increase yearly

globally. In 2022, the growth of non-cash transactions was estimated to reach 1,045.5 billion USD, with the highest growth in developing countries in Asia and the Middle East [2]. Digital wallets are now necessary for people to carry out their activities and meet their needs [3][4]. This positive trend must be followed by good user experience and application usability [5]. E-Wallet is an electronic service that functions to store data and as a payment instrument. In principle, E-Wallet is similar to mobile banking or Internet banking services, but the depositor does not use a bank but a digital wallet. E-wallet applications in Indonesia include OVO, Dana, GoPay, Shopeepay, Jenius, LinkAja, and others [6].

OVO is an electronic wallet application in Indonesia that users have used since 2016. OVO offers easy payments for phone credit, data packages and insurance. Nevertheless, OVO got some negative reviews on Google Play and App Store. One of the negative reviews that users feel about the OVO application is a user experience problem which causes the application's user experience to work better than the

### Commented [A1]:

The abstract of your article on the user experience and usability of the OVO application presents an insightful evaluation of a significant topic. However, it could be improved with a clear identification of the research gaps your study intends to fill, a brief but comprehensive overview of your research design, and a more nuanced discussion of the practical implications of your findings. Furthermore, it would help to simplify some sentences for better readability. The research contributes valuable empirical data to the field, and with some revisions, the article will be a compelling addition to the literature.

user expects. Some users complained that the OVO application response process was slow and that the payment process using OVO took too long for them. The application's usability includes the user experience issues experienced by OVO users. Usability refers to how quickly and easily application users can complete tasks [7].

Research using the user experience questionnaire method and system usability scale was conducted by Guntur Eka Saputra, Rakhmi Khalida, and Ratu Nurmalika from Gunadarma University entitled "Evaluation of User Experience TLX Training Gate for Competitive Programming Learning using User Experience Questionnaire and System Usability Scale". In this study, the measurement results were obtained on 6 UEQ scales, namely the attractiveness scale (1.27), perspicuity (0.85), efficiency (1.12), dependability (1.13), stimulation (1.35) and novelty (0.81). All scales get positive impressions; the SUS score is 75 [8].

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*User Experience Questionnaire* is a questionnaire that provides an overview of the level of user satisfaction based on user experience. The User Experience Questionnaire has six scales with 26 statements. This scale includes attractiveness, perspicuity, dependability, efficiency, stimulation, and novelty. The user experience questionnaire has been tested in several cases to provide an overview of user satisfaction. It usually takes 3-5 minutes to read and complete the user experience questionnaire. One of the other advantages of the user experience questionnaire is the free availability of this questionnaire which is available in the Indonesian language version. User experience questionnaire data analysis was carried out using the

UEQ Data Analysis Tool, which compared the value of each aspect with existing product data [13].

John Brooke created the SUS questionnaire at the Digital Equipment Corporation in England 1986 [14]. This questionnaire measures three crucial aspects. The first aspect is the effectiveness of using this technology in achieving user goals. The second aspect is efficiency, namely how much user effort and resources are expended in achieving these goals. The third aspect is satisfaction, where how satisfying is the user experience [15].

## 2. Research Methods

This study aims to assess and quantify the user experience and usability of the OVO application by employing the User Experience Questionnaire (UEQ) and System Usability Scale (SUS). The research methodology and process are illustrated in Figure 1.

### A. Research Design

The research design is evaluative and descriptive, which aims to measure and explain the success of a particular product, program or activity so that conclusions can be drawn about its feasibility, relevance, effectiveness and efficiency.

### B. Research Process

The research framework used as a reference in the research to be carried out is shown in Figure 1.

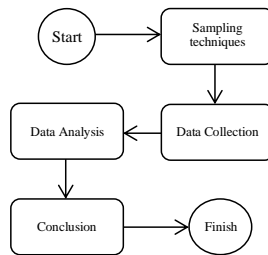


Figure 1. Research Process

Figure 1. menjelaskan bahwa alur penelitian dimulai dengan teknik pengambilan sampel dan berakhir dengan penentuan kesimpulan. Informasi rinci tentang setiap kegiatan penelitian akan disajikan dalam sub bab pembahasan selanjutnya.

### C. Sampling Technique

This stage aims to determine the sample and sampling technique used during the study. The population that is the focus of this research are those who use the OVO application. This study uses the Lemeshow formula to determine the number of samples with an unknown

**Commented [A2]:** The introduction to your article presents a detailed overview of the shift from cash-based transactions to electronic transactions and the significance of digital wallets in modern economies. You effectively established the importance of your research in the context of Indonesia's popular OVO app, and adequately highlighted the existing negative reviews regarding the app's user experience. The review of past studies employing similar methodologies to evaluate other applications lends additional credibility to your research approach. Good job!

However, there are areas for improvement. Firstly, you could further elaborate on the implications of these negative reviews on OVO's overall performance and user engagement. This would provide a compelling argument for why it's crucial to study the user experience and usability of the OVO app in particular. Secondly, a more in-depth exploration of the user experience and usability concepts, and how they are generally evaluated in the field, would enhance reader comprehension and engagement.

The latter part of the introduction could be improved by integrating the information more seamlessly. The descriptions of User Experience Questionnaire and System Usability Scale seem somewhat detached from the rest of the text. Rather than presenting these methods as separate entities, consider linking them back to the OVO application. Explain why these specific tools are suitable for your study, and how they could potentially address the problems you have identified.

Finally, while it is helpful to provide historical information about these methodologies (like the creation of the SUS questionnaire), such details might be more appropriate in a separate 'Methodology' section, instead of the introduction. The introduction should be primarily focused on setting up the research problem and objectives.

**Commented [A3]:** What is the research design of this article? This is only an explanation of "what is a research design".

**Commented [A4]:** Please change this to English



population [16]. Through the Lemeshow formula, the number of samples to be taken is at least 100 respondents. The sampling technique used in this study is Non-Probability Sampling, namely Purposive Sampling, a sampling technique selected based on specific criteria that the researcher wants. The criteria used in this study are as follows:

- a. OVO application users.
- b. Located di Indonesia.
- c. Minimum age of 15 years.

**D. Data Collection**

At this stage, data collection was carried out from predetermined respondents. In this study, the instrument used was a questionnaire. The questionnaire will include questions about the respondent's identity, the general use of the OVO application, 26 user experience questionnaire statements, and ten system usability scale statements. At this stage, the questionnaire will be distributed indirectly or online. To OVO application users, questionnaires will be distributed via social media such as Whatsapp, Telegram, Twitter and Instagram. Questionnaires will be created and filled out using Google Forms. The dissemination was done from 9 February 2023 to 16 March 2023. The samples obtained during the deployment were 166 respondents, but 11 were not users of the OVO application, so the remaining 155 respondents.

The user experience questionnaire consists of 6 scales divided into 26 indicator questions, as shown in Table 1. The user experience questionnaire uses a 7-point semantic differential scale. Respondents were asked to assess from 1 to 7 on 26 UEQ indicator items according to their subjective assessment. The User Experience Questionnaire (UEQ) is used to measure user experience consisting of 26 question components covering aspects [17]:

- a. **Attractiveness**  
The product should look attractive, enjoyable, friendly, and pleasant.
- b. **Efficiency**  
I should perform my tasks with the product fast, efficient, and in a pragmatic way.
- c. **Perspiciuity**  
The product should be easy to understand, clear, simple, and easy to learn.
- d. **Dependability**  
The interaction with the product should be predictable, secure, and meets my expectations.
- e. **Stimulation**  
Using the product should be interesting, exiting, and motivating.
- f. **Novelty**

The product should be innovative, inventive, and creatively designed.

The components of the UEQ questions based on the aspects assessed are shown in Table 1.

Table 1. UEQ Testing Instruments

Scale	Indicator		Item
Attractiveness	Inconvenient	Enjoyable	ATT1
	Good	Bad	ATT2
	Dislike	Gratifying	ATT3
	Uncomfortable	Comfortable	ATT4
	Attractive	Unattractive	ATT5
	User-friendly	User-unfriendly	ATT6
Perspicuity	Not understood	Understandable	PER1
	Easily understood	Hardly understood	PER2
	Complicated	Simple	PER3
	Clear	Confusing	PER4
Efficiency	Fast	Slow	EFF1
	Inefficient	Efficient	EFF2
	Impractical	Practical	EFF3
	Organized	Disorganized	EFF4
Dependability	Unpredictable	Predictable	DEP1
	Obstruct	Supportive	DEP2
	Safe	Unsafe	DEP3
	Meet expectations	Not meeting expectations	DEP4
Stimulation	Beneficial	Less beneficial	STI1
	Tedious	Engaging	STI2
	Unappealing	Interesting	STI3
	Motivational	Unmotivating	STI4
Novelty	Creative	Monotonous	NOV1
	Innovative	Conventional	NOV2
	Commonplace	Leading-edge	NOV3
	Conservative	Innovative	NOV4

The system usability scale questionnaire consists of 10 statements, as shown in Table 2. The system usability scale questionnaire uses a 5-point Likert scale. Respondents were asked to provide an assessment of "Strongly Disagree", "Disagree", "Neutral", "Agree", and "Strongly Agree" on the 10 SUS statements according to their subjective assessment. The System Usability Scale (SUS) measures the usability attributes of the OVO application, namely aspects of effectiveness, efficiency, satisfaction, satisfaction, easy to learn, ease to remember and few errors. SUS gives an overall score between 0 and 100. The SUS half section (odd statements, i.e. 1, 3, 5, 7, and 9) describes a positive evaluation (items with positive polarity). The other half of the sections (even statements, i.e. 2, 4, 6, 8, and 10) depict negative evaluations (items with negative polarity). For items with positive polarity, answers were coded as 0 to 4 from disagreement to agreement. Whereas for items with negative polarity, the answers are coded from 4 to 0 [18]. The list of SUS statements is shown in Table 2.

Table 2. SUS Testing Instruments [14]

Questions	Item
I think that i would like to use this system frequently	SUS1
I found the system unnecessarily complex	SUS2
I thought the system was easy to use	SUS3

**Commented [A6]:** A mention of how you addressed any potential bias, particularly response and non-response bias common in online surveys, would make the methodology more robust. An explanation of how you handled incomplete or inappropriate responses would add depth to your data collection process and increase the validity of your study.

**Commented [A5]:** Please expand a bit more on why you chose the Purposive Sampling method specifically and how it benefits the study. An explanation on how you ensure a wide and representative demographic range within your sample, especially given the non-probability nature of the sampling, would be beneficial. This could be crucial in increasing the generalizability and relevance of your findings, especially when considering the diverse user base of the OVO application.

Questions	Item
I think that I would need the support of a technical person to be able to use this system	SUS4
I found the various functions in this system were well integrated	SUS5
I thought there was too much inconsistency in this system	SUS6
I would imagine that most people would learn to use this system very quickly	SUS7
I found the system very cumbersome to use	SUS8
I felt very confident using the system	SUS9
I needed to learn a lot of things before I could get going with this system	SUS10

**E. Data Analysis**

At this stage, data inconsistencies analysis, quantitative data analysis, demographic analysis, and descriptive statistical analysis of the data that has been obtained are carried out. The data obtained will be processed using IBM SPSS Statistics 25, UEQ Data Analysis Tool, and Microsoft Excel.

In analysing data inconsistencies using the UEQ Data Analysis Tool Version 12. At this stage, the seriousness of the respondents was tested in answering the questionnaire and detecting suspicious data. If the critical value is > 2 and the critical length value is > 15, this indicates an error in filling out the questionnaire, and it is better to delete the data.

In the analysis of quantitative data, a validity test and a reliability test will be carried out on the data that has been obtained. The validity test was carried out by looking at the Pearson correlation value of each indicator for each variable. In contrast, the reliability test was carried out by looking at Cronbach's alpha ( $\alpha$ ) value of each research variable.

In the analysis of demographic data, respondent data will be grouped based on gender, age, duration of use, and frequency of use. The data will then be represented as a chart or graph.

In the descriptive statistical analysis using UEQ Data Analysis Tool Version 12 and Microsoft Excel. The data presented in this descriptive statistical test shows data that can be seen from the mean, which is the average value of each measured scale; the maximum, which is the highest value of each measured scale; the minimum, which is the lowest value of each measured scale, and the standard deviation used to determine the distribution of data from the sample and used to describe each research variable.

Several rules must be considered when transforming scores on questionnaire data using UEQ:

- Each answer in the UEQ questionnaire is rated on a scale of 1 to 7, indicating the level of user acceptance from "negative" to "positive".
- These items have a scale from -3 to +3. Thus, -3 represents the most negative answer, 0 is a

neutral answer, and +3 is the most positive answer [19].

After the data transformation, only the average or mean assessment can be carried out for each scale or question item on the UEQ from each respondent's answer. The following are the rules for the average or mean rating scale in UEQ which can be seen in Table 3:

Table 23. UEQ Mean Rating Scale

Mean Value Range	Explanation
> 0.8	Positive Evaluation
-0.8 – 0.8	Neutral Evaluation
< -0.8	Negative Evaluation

If the mean value of an item is more significant than 0.8, then the item will enter into the positive evaluation category and, in the diagram, is in the green area. If the mean value of an item is between -0.8 to 0.8, then the item will fall into the normal or neutral evaluation category and, in the diagram, is in the yellow area. Meanwhile, if the mean value of an item is less than -0.8, then the item will enter into the negative evaluation category and in the diagram, it is in the red area.

Then several rules must be considered when calculating scores on questionnaire data using SUS:

- For every odd-numbered question (1, 3, 5, 7, 9), the score obtained from user responses will be reduced by 1..
 
$$odd\ weight = xi - 1 \tag{1}$$
- Each even-numbered question (2, 4, 6, 8, 10) will have its final score calculated by subtracting the user's score from 5
 
$$even\ weight = 5 - xi \tag{2}$$
- The SUS score is obtained by summing up the scores of each question and then multiplying it by 2.5.
 
$$SUS\ Score = (odd\ weight + even\ weight) \times 2,5 \tag{3}$$
- The scoring rules mentioned above apply to one respondent. For multiple respondents, the SUS scores of each respondent are summed up and then divided by the number of respondents to calculate the average SUS score..
 
$$\bar{x} = \frac{\sum x}{n} \tag{4}$$

$\bar{x}$  represents the average SUS score,  $\sum x$  denotes the sum of the SUS scores, and n indicates the number of respondents.

**3. Results and Discussions**

**A. Analysis of Data Inconsistencies**

The analysis of inconsistencies in the data is conducted using UEQ Data Analysis Tools Version 12,

**Commented [A7]:** A brief discussion on how you mitigated any potential errors or bias in your data analysis, and how you handled any outliers or missing data, would make this section more robust.

specifically on the Inconsistencies tab. Inconsistencies are utilized to assess respondents' seriousness in answering the questionnaire, determining whether they responded haphazardly or without seriousness, and detecting suspicious data. If the critical value is more significant than two and the critical length exceeds 15, it indicates errors in completing the questionnaire, and it is recommended to remove such data.

Table 34. Inconsistencies Data

No.	Scales with inconsistent answers						Critical length
	Attractiveness	Perspicuity	Efficiency	Dependability	Stimulation	Novelty	
12	1	1	1	1	1	1	7
44	1	1	1	1	1	1	7
113	1	1	1	1	1	1	7
126	1	1	1	1	1	1	7
132	1	1	1	1	1	1	7
134	1	1	1	1	1	1	7
151	1	1	1	1	1	1	7

After the update by removing data, 155 respondent data was reduced to only 148.

B. Quantitative Data Analysis

In this stage, a testing or pilot test is conducted before the actual research to assess the suitability of a questionnaire. Before data collection, the author distributed the questionnaire to 30 respondents to test its validity and reliability. Valid questionnaires with reliable indicators were distributed to respondents who met the criteria and matched the predetermined sample size.

a. Validity Test

The validity test is conducted on 30 respondents to assess the validity of the questionnaire. An item is considered valid if the calculated r exceeds the tabled r. The significance level is 0.05 or 5% for 30 respondents, resulting in a tabled r of 0.361. Below are the validity test results for each variable item:

Table 45. Validity test of the attractiveness scale

Item	The calculated r value	The tabled r value	Description
ATT1	0.646	0.361	Valid
ATT2	0.751	0.361	Valid
ATT3	0.877	0.361	Valid
ATT4	0.582	0.361	Valid
ATT5	0.713	0.361	Valid
ATT6	0.538	0.361	Valid

Table 5 demonstrates that all items in the attractiveness scale are deemed valid as the calculated r values are more significant than the tabled r value.

Table 56. Validity test of the perspicuity scale

Item	The calculated r value	The tabled r value	Description
PER1	0.373	0.361	Valid
PER2	0.523	0.361	Valid
PER3	0.464	0.361	Valid
PER4	0.712	0.361	Valid

Table 6 shows that all items in the perspicuity scale are considered valid as the calculated r values are more significant than the tabled r value.

Table 67. Validity test of the efficiency scale

Item	The calculated r value	The tabled r value	Description
EFF1	0.645	0.361	Valid
EFF2	0.713	0.361	Valid
EFF3	0.678	0.361	Valid
EFF4	0.660	0.361	Valid

Table 7 shows that all items in the efficiency scale are deemed valid as the calculated r values are more significant than the tabled r value.

Table 78. Validity test of the dependability scale

Item	The calculated r value	The tabled r value	Description
DEP1	0.720	0.361	Valid
DEP2	0.444	0.361	Valid
DEP3	0.504	0.361	Valid
DEP4	0.788	0.361	Valid

Table 8 shows that all items in the dependability scale are considered valid as the calculated r values are more significant than the tabled r value.

Table 89. Validity test of the stimulation scale

Item	The calculated r value	The tabled r value	Description
STI1	0.666	0.361	Valid
STI2	0.776	0.361	Valid
STI3	0.578	0.361	Valid
STI4	0.741	0.361	Valid

Table 9 displays that all items in the stimulation scale are deemed valid as the calculated r values are more significant than the tabled r value.

Table 94. Validity test of the novelty scale

Item	The calculated r value	The tabled r value	Description
NOV1	0.754	0.361	Valid
NOV2	0.469	0.361	Valid
NOV3	0.615	0.361	Valid
NOV4	0.544	0.361	Valid

Table 10 shows that all items in the novelty scale are considered valid as the calculated r values are more significant than the tabled r value.

Table 104. Validity test of SUS

Item	The calculated r value	The tabled r value	Description
SUS1	0.475	0.361	Valid
SUS2	0.822	0.361	Valid
SUS3	0.423	0.361	Valid
SUS4	0.687	0.361	Valid
SUS5	0.387	0.361	Valid
SUS6	0.782	0.361	Valid
SUS7	0.433	0.361	Valid
SUS8	0.785	0.361	Valid

**Commented [A8]:**

The approach of analyzing data inconsistencies using the UEQ Data Analysis Tools Version 12 is a valuable step that ensures the reliability of the responses. By setting critical value parameters, you enhance the credibility of your results, filtering out potentially careless or insincere responses. This rigorous step adds to the methodological strength of your study, emphasizing the importance of accurate, thoughtful input from respondents for reliable, insightful conclusions.

Item	The calculated r value	The tabled r value	Description
SUS9	0.406	0.361	Valid
SUS10	0.671	0.361	Valid

Table 11 shows that all items on the SUS are deemed valid because the computed r-value is greater than the critical r-value.

a. Reliability Test

Table 1142. Reliability Test of 26 UEQ Items

Reliability Statistics	
Cronbach's Alpha	N of Items
0.993	26

Table 12 shows that all indicator items in the UEQ are deemed reliable because the Cronbach's alpha values are greater than 0.60.

Table 1243. Reliability Test of the 6 UEQ Scales

Scale	Cronbach's Alpha
Attractiveness	0.90
Perspicuity	0.90
Efficiency	0.87
Dependability	0.80
Stimulation	0.91
Novelty	0.83

Table 13 displays that all scales in the UEQ are considered reliable as the Cronbach's alpha values are greater than 0.60.

Table 1344. Reliability Test of SUS

Reliability Statistics	
Cronbach's Alpha	N of Items
0.795	10

Table 14 shows that all items in the SUS questionnaire are considered reliable, as the Cronbach's alpha values are greater than 0.60.

C. Analysis of Demographic Data

Respondents' characteristics can be grouped based on gender, age, residence, highest education level, duration of app usage, and intensity of app usage to provide an overview of the respondents' conditions. The following are the results of the demographic analysis of the respondents:

a. Gender

Table 1445. Characteristics Based on Gender

Gender	Total	Percentage
Male	52	35.1%
Female	196	64.9%

According to Table 15, there are 52 male respondents, accounting for 35.1% of the total, and 96 female respondents, accounting for 64.9%. Therefore, it can be concluded that the majority of OVO users in this study are female.

b. Age

Table 1546. Characteristics Based on Age

Age	Total	Percentage
15 – 23 years	112	75.7%
24 – 32 years	14	9.5%
33 – 41 years	10	6.8%
42 – 50 years	10	6.8%
> 50 years	2	1.4%

According to Table 16, it can be seen that there are 112 respondents aged 15-23 years old, accounting for 75.7%, 14 respondents aged 24-32 years old, accounting for 9.5%, 10 respondents aged 33-41 years old, accounting for 6.8%, 10 respondents aged 42-50 years old, accounting for 6.8%, and 2 respondents aged over 50 years old, accounting for 1.4%. Therefore, it can be concluded that the majority of OVO users in this study are aged between 15 and 23 years old.

c. Residence

Table 1647. Characteristics Based on Residence

Residence	Total	Percentage
Banten	3	2%
Bengkulu	1	0.7%
DKI Jakarta	37	25%
West Java	25	16.9%
Central Java	1	0.7%
East Java	4	2.7%
Bangka Belitung	6	4.1%
Riau	1	0.7%
Lampung	1	0.7%
South Sulawesi	1	0.7%
South Sumatra	66	44.6%
North Sumatra	2	1.4%

According to Table 17, it can be seen that there are respondents from various provinces in Indonesia. There are three respondents (2%) from Banten Province, 1 respondent (0.7%) from Bengkulu Province, 37 respondents (25%) from DKI Jakarta Province, 25 respondents (16.9%) from West Java Province, 1 respondent (0.7%) from Central Java Province, four respondents (2.7%) from East Java Province, six respondents (4.1%) from Bangka Belitung Islands Province, 1 respondent (0.7%) from Riau Islands Province, 1 respondent (0.7%) from Lampung Province, one respondent (0.7%) from South Sulawesi Province, 66 respondents (44.6%) from South Sumatra Province, and two respondents (1.4%) from North Sumatra Province.

From the data, most OVO users involved in this study are from South Sumatra Province.

d. Highest education level

Table 1748. Characteristics based on highest education level

Highest education level	Total	Percentage
Elementary School	1	0.7%
Junior High School	5	3.4%
Senior High School	97	65.5%
Diploma	2	1.4%
Bachelor's Degree	40	27%

Master's Degree	1	0.7%
Other	2	1.4%

According to Table 18, it can be seen that there is one respondent with an elementary school education, accounting for 0.7%, five respondents with a junior high school education, accounting for 3.4%, 97 respondents with a senior high school education, accounting for 65.5%, two respondents with a diploma (D3) education, accounting for 1.4%, 40 respondents with a bachelor's degree (S1) education, accounting for 27%, one respondent with a master's degree (S2) education, accounting for 0.7%, and two respondents with other last education, accounting for 1.4%. Therefore, most OVO users in this study have a high school education.

e. Usage Duration

Table 1819. Characteristics based on usage duration

Usage duration	Total	Percentage
< 1 year	33	22.3%
1 – 3 years	57	38.5%
> 3 years	58	39.2%

Based on Table 19, it can be seen that 33 respondents have been using the OVO application for less than one year, accounting for 22.3%, 57 respondents who have been using the OVO application for 1 to 3 years, accounting for 38.5%, and 58 respondents who have been using the OVO application for more than three years, accounting for 39.2%. Therefore, most OVO users in this study have used the OVO application for over three years.

f. Usage Intensities

Table 1920. Characteristics based on usage intensities

Usage intensities	Total	Percentage
Rarely	29	19.6%
Sometimes	52	35.1%
Frequently	60	40.5%
Very frequently	7	4.7%

According to Table 20, it can be seen that 29 respondents rarely use the OVO application, accounting for 19.6% of the total, 52 respondents sometimes use the OVO application, accounting for 35.1%, 60 respondents who frequently use the OVO application, accounting for 40.5%, and seven respondents who use the OVO application very frequently, accounting for 4.7%. Most OVO users in this study frequently use the OVO application.

D. Descriptive Statistical Analysis

Descriptive statistical analysis of the User Experience Questionnaire (UEQ) method is conducted by calculating the mean scores for each UEQ scale and each question item. However, data transformation needs to be performed before conducting the descriptive statistical analysis. The following table and graph show the mean scores for pragmatic and hedonic quality:

Table 2024. Mean Score of Pragmatic and Hedonic Quality

Pragmatic and Hedonic Quality	
Attractiveness	1.56
Pragmatic Quality	1.52
Hedonic Quality	0.90

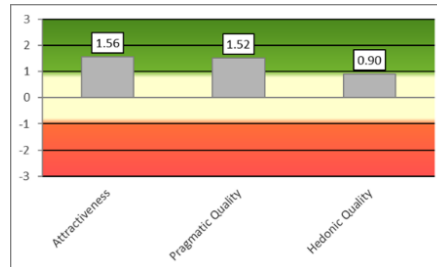


Figure 2. Graph of Mean Scores for Pragmatic and Hedonic Quality

Based on the data presented in Table 16 and Figure 2, it can be observed that attractiveness, pragmatic quality, and hedonic quality of the OVO application are in the green area, indicating positive evaluation scores. The following table and graph show the mean scores for the 6 UEQ scales:

Table 2122. Mean Scores of the 6 UEQ Scales

UEQ Scales	
Attractiveness	1.563
Perspicuity	1.671
Efficiency	1.546
Dependability	1.331
Stimulation	1.162
Novelty	0.644

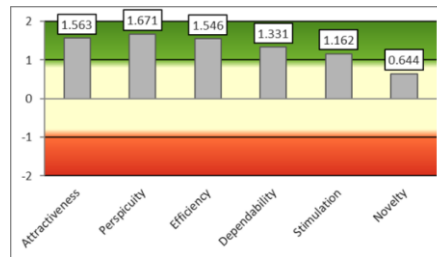


Figure 3. Graph of Mean Scores for UEQ Scales

Based on the data presented in Table 17 and Figure 3, it can be observed that the attractiveness scale, perspicuity scale, efficiency scale, dependability scale, and stimulation scale of the OVO application are in the green area, indicating positive evaluation scores. On the other hand, the novelty scale is in the yellow area, indicating a neutral evaluation score.

Table 2223. The mean scores for each UEQ item

Item	Mean	Left	Right
ATT1	1.5	menyusahkan	menyenangkan
PER1	1.8	tak dapat dipahami	dapat dipahami
NOV1	1.0	katif	monoton
PER2	1.6	mudah dipelajari	sulit dipelajari

Item	Mean	Left	Right
STI1	1.5	bermanfaat	kurang bermanfaat
STI2	0.7	membosankan	mengasyikkan
STI3	1.2	tidak menarik	menarik
DEP1	0.9	tak dapat diprediksi	dapat diprediksi
EFF1	1.4	cepat	lambat
NOV2	0.3	berdaya cipta	konvensional
DEP2	1.6	menghalangi	mendukung
ATT2	1.8	baik	buruk
PER3	1.5	rumit	sederhana
ATT3	1.4	tidak disukai	menggembirakan
NOV3	0.7	lazim	terdepan
ATT4	1.6	tidak nyaman	nyaman
DEP3	1.5	aman	tidak aman
STI4	1.2	memotivasi	tidak memotivasi
DEP4	1.3	memenuhi ekspektasi	tidak memenuhi ekspektasi
EFF2	1.5	tidak efisien	efisien
PER4	1.8	jelas	membingungkan
EFF3	1.8	tidak praktis	praktis
EFF4	1.5	terorganisasi	berantakan
ATT5	1.4	atraktif	tidak atraktif
ATT6	1.8	ramah pengguna	tidak ramah pengguna
NOV4	0.7	konservatif	inovatif

Based on Table 23, it can be observed that all UEQ items received positive evaluations except for item STI2 (boring/engaging), item NOV2 (conventional/innovative), item NOV3 (ordinary/leading), and item NOV4 (conservative/innovative) which received neutral evaluations..

Table 2324. Benchmark Results

Scale	Mean	Comparison to benchmark
Attractiveness	1.56	Above Average
Perspicuity	1.67	Above Average
Efficiency	1.55	Good
Dependability	1.33	Above Average
Stimulation	1.16	Above Average
Novelty	0.64	Below Average

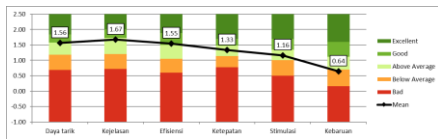


Figure 4. Benchmark Results Graph

Based on Table 24 and Figure 4, the benchmark results indicate that the efficiency scale is rated "Good". The attractiveness, perspicuity, dependability, and stimulation scales are rated as "Above Average". However, the novelty aspect is still rated as "Below Average".

Descriptive statistical analysis using the System Usability Scale (SUS) method in this study involved calculating the average or mean SUS scores. However, before conducting the descriptive statistical analysis, data transformation is necessary using the rules of the SUS method. After the data transformation, the average or mean SUS scores can be assessed. From the final

scores, it can be determined whether the system is rated as good or not. The following are the results of calculating the average or mean SUS scores using the rules of the SUS method:

Table 2425. Summary of SUS Score Calculation Results

R	Calculated Score		R	Calculated Score	
	Total	Score		Total	Skor
1	29	72.5	75	38	95
2	33	82.5	76	20	50
3	40	100	77	40	100
4	40	100	78	22	55
5	30	75	79	32	80
6	30	75	80	28	70
7	26	65	81	37	92.5
8	29	72.5	82	37	92.5
9	29	72.5	83	30	75
10	28	70	84	36	90
11	30	75	85	34	85
12	33	82.5	86	20	50
13	35	87.5	87	37	92.5
14	34	85	88	23	57.5
15	28	70	89	28	70
16	36	90	90	34	85
17	34	85	91	29	72.5
18	34	85	92	24	60
19	28	70	93	40	100
20	39	97.5	94	35	87.5
21	40	100	95	35	87.5
22	40	100	96	35	87.5
23	38	95	97	36	90
24	34	85	98	33	82.5
25	32	80	99	40	100
26	18	45	100	26	65
27	40	100	101	25	62.5
28	26	65	102	30	75
29	25	62.5	103	33	82.5
30	28	70	104	30	75
31	31	77.5	105	19	47.5
32	29	72.5	106	32	80
33	23	57.5	107	28	70
34	36	90	108	36	90
35	24	60	109	24	60
36	39	97.5	110	29	72.5
37	34	85	111	21	52.5
38	26	65	112	35	87.5
39	26	65	113	36	90
40	33	82.5	114	26	65
41	36	90	115	37	92.5
42	29	72.5	116	40	100
43	26	65	117	28	70
44	30	75	118	40	100
45	32	80	119	32	80
46	35	87.5	120	25	62.5
47	34	85	121	40	100
48	35	87.5	122	37	92.5
49	29	72.5	123	32	80
50	33	82.5	124	37	92.5
51	35	87.5	125	35	87.5
52	31	77.5	126	31	77.5
53	36	90	127	25	62.5
54	38	95	128	20	50
55	40	100	129	18	45
56	29	72.5	130	31	77.5
57	34	85	131	20	50
58	25	62.5	132	30	75
59	36	90	133	31	77.5
60	24	60	134	20	50
61	26	65	135	16	40
62	27	67.5	136	20	50



R	Calculated Score		R	Calculated Score	
	Total	Score		Total	Skor
63	26	65	137	36	90
64	33	82.5	138	35	87.5
65	34	85	139	28	70
66	33	82.5	140	20	50
67	34	85	141	39	97.5
68	38	95	142	33	82.5
69	26	65	143	34	85
70	28	70	144	34	85
71	30	75	145	29	72.5
72	40	100	146	33	82.5
73	25	62.5	147	26	65
74	29	72.5	148	22	55
<b>Average SUS score</b>					
<b>77.53</b>					

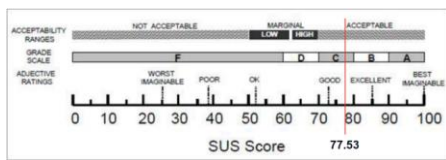


Figure 5. SUS Score Value [20]

Table 25 and Figure 5 summarize SUS score calculations from the questionnaires distributed to 148 respondents, resulting in an average or mean score of 77.53 according to the System Usability Scale (SUS) method.

After obtaining the SUS score, the next step is interpreting the results. There are three perspectives to determine the interpretation of the SUS score calculations:

a. Acceptability

Acceptability ranges consist of three levels: not acceptable, marginal (low and high), and acceptable. Acceptability is used to assess the level of user acceptance of the application.

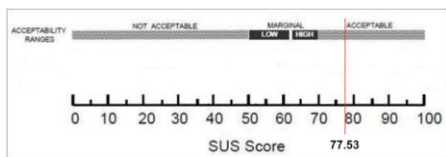


Figure 6. Acceptability Ranges

In the calculation of the SUS score, the previously obtained score was 77.53, indicating that the user acceptance level of the OVO application is categorized as "ACCEPTABLE".

b. Grade

The grade scale consists of A, B, C, D, and F, which are used to determine the grade level of the application.

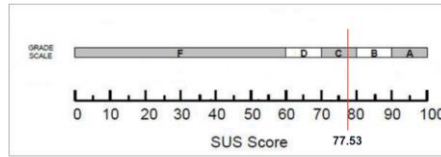


Figure 7. Grade Scales

In the calculation of the SUS score, the previously obtained score was 77.53, indicating that the OVO application falls under the "C" grade.

c. Adjective

Adjective ratings consist of the categories worst imaginable, poor, ok, good, and best imaginable. Adjective ratings are used to determine the rating of the application.

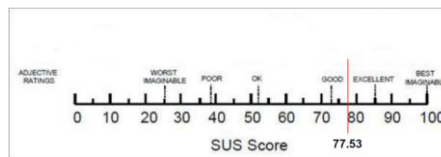


Figure 8. Adjective Ratings

In the calculation of the SUS score, the previously obtained score was 77.53, indicating that the OVO application falls under the "GOOD" category.

E. Improvement Recommendations

Based on the evaluation of user experience conducted using the User Experience Questionnaire (UEQ) method, processed using UEQ Data Analysis Tool Version 12, the following recommendations can be given for the OVO application:

- a. Provide more innovative, cutting-edge, and creative services or features in the OVO application, such as adopting new and innovative features that align with the current trends. It will help improve novelty, ensuring the application stays up-to-date and provides a unique user experience.
- b. Offer more engaging services or features in the OVO application, such as incorporating gamification elements to earn OVO Points or adding captivating animations and enjoyable sound effects. It will enhance the stimulation aspect, making the user experience more enjoyable and interactive.

**Commented [A9]:** Overall, these recommendations are well-considered and likely to effectively address the issues identified in the user experience evaluation.

4. Conclusion

The user experience and usability evaluation using the User Experience Questionnaire (UEQ) and System Usability Scale (SUS) has been successfully conducted, involving 148 competent respondents who assessed the

application based on gender, age, duration of usage, and frequency of usage. The benchmark results for the six aspects of UEQ show that one aspect, efficiency, falls into the "good" category with a mean value of 1.55. Additionally, four aspects, namely attractiveness (mean: 1.56), perspicuity (mean: 1.67), dependability (mean: 1.33), and stimulation (mean: 1.16), are classified as "above average" categories. However, one aspect, novelty, falls into the "below average" category with a mean value of 0.64. Regarding the measurement of OVO application usability using the System Usability Scale (SUS) method, the obtained score is 77.53. This score falls within the "Acceptable" range in the Acceptability Ranges category, a "C" grade in the Grade Scale category, and is rated as "Good" in the Adjective Ratings category.

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**Commented [A10]:** It might be helpful to restate the research objective at the beginning of the conclusion section to immediately remind readers of what the study sought to achieve, thus making it easier for them to assess whether or not the research objectives were met.

It would be also beneficial to end the conclusion with a general summary statement reflecting the overall performance of the OVO application based on the research findings, creating a more rounded conclusion.



1. Introduction  
Today's modern transactions continue to shift from cash-based transactions to electronic-based transactions. Rapid transactions through Information and Communication Technology (ICT) has contributed significantly to the market transformation of their financial and operational businesses. The trend towards digitalization and internet use has brought about significant changes in how the global economy operates. The emergence of various financial technologies (FinTech) applications is enabling consumers to go beyond conventional cash-based payment systems. Digital payments are becoming the norm in people's daily lives. This rapid development in the financial sector led to the invention of many digital payment technologies, where users and payees use digital applications to send and receive money. As such, payment systems are rapidly changing from coin and paper-based cash to convenient, fast and cost-effective forms of digital payments [1]. The development of non-cash transactions is expected to increase vastly globally. In 2022, the growth of non-cash transactions was estimated to reach 1,045.5 billion USD, with the highest growth in developing countries in Asia and the Middle East [2]. Digital wallets are now necessary for people to carry out their activities and meet their needs [3][4]. This positive trend must be followed by good user experiences and application usability [5]. E-Wallet is an electronic service that functions to store data and as a payment instrument in practice. E-Wallet is similar to mobile banking or internet banking services, but the depositor does not use a bank but a digital wallet. E-wallet applications in Indonesia include OVO, Dana, GoPay, ShopeePay, IKNSS, LinkAja, and others [6]. OVO is an electronic wallet application in Indonesia that users have used since 2016. OVO offers many services for phone credit, data packages and insurance. Nevertheless, OVO got some negative reviews on Google Play and App Store. One of the negative reviews that users feel about the OVO application is a user experience problem which causes the application user experience to work better than the user expects. Some users complained that the OVO application response process was slow and that the payment process using OVO took too long for them. Some users on OVO have consistent reviews for its overall performance and user management. They can have OVO registration, view potential users, factors, user engagement and retention, account responsiveness, and manage the brand's image. Addressing these positive reviews is crucial for OVO success in the digital payment industry because reviews on OVO have significant implications for its overall performance and user management. They can have OVO registration, view potential users, factors, user engagement and retention, account responsiveness, and manage the brand's image. Addressing these positive reviews is crucial for OVO success in the digital payment industry because reviews on OVO have significant implications for its overall performance and user management. They can have OVO registration, view potential users, factors, user engagement and retention, account responsiveness, and manage the brand's image. Addressing these positive reviews is crucial for OVO success in the digital payment industry because reviews on OVO have significant implications for its overall performance and user management.

Research aims to evaluate the user experience and usability of the OVO application by using the User Experience Questionnaire (UEQ) and System Usability Scale (SUS). The research methodology and process are illustrated in Figure 1. A. Research Design The research design in this article is evaluative and descriptive. It aims to measure and explain the success of a specific product, process, or activity, reaching conclusions to be drawn about its feasibility, relevance, effectiveness, and efficiency. This design provides a framework for assessing and analyzing the success of a particular product, process, or activity so that conclusions can be drawn about its feasibility, relevance, effectiveness, and efficiency. B. Research Process The research framework used as a reference in the research to be carried out is shown in Figure 1. Figure 1: Research Process

### Comments

Resolved

**Author**  
The introduction to your article presents a detailed overview of the shift from cash-based transactions to electronic transactions and the significance of digital wallets in modern economies. You effectively established the importance of your research in the context of Indonesia's popular OVO app, and adequately highlighted the existing negative reviews regarding the app's user experience. The review of past studies employing similar methodologies to evaluate other applications lends additional credibility to your research approach. Good job!

However, there are areas for improvement. Firstly, you could further elaborate on the implications of these negative reviews on OVO's overall performance and user engagement. This would provide a compelling argument for why it's crucial to study the user experience and usability of the OVO app in particular. Secondly, a more in-depth application of the user

6 UEQ scales, namely the attractiveness scale (1.27), perceptivity (0.85), efficiency (1.12), dependability (1.13), stimulation (1.33) and novelty (0.81). All scales got positive impressions; the SUS score is 71 [8]. Furthermore, research was conducted by Nina Setyapriya and Devi Hana Bengaliyanti entitled 'The Comparison of Evaluation on User Experience and Usability of Mobile Banking Applications Using the Experience Questionnaire and System Usability Scale'. In this study, the 6 UEQ scale measurements on four mobile banking applications received a positive impression on each scale except for BNI Mobile (Efficiency and Novelty) and Laju (Novelty), which received a neutral impression. SUS scores were obtained for the four mobile banking applications, namely BNI Mobile (72.49), Core Mobile (64.7), BNI Mobile (71.49), and Laju (72.4) [5]. This study aims to evaluate the user experience and measure the usability of the OVO application. The user experience in the OVO application is evaluated using a user experience questionnaire by analyzing six scales of respect, namely attractiveness, perceptivity, dependability, efficiency, stimulation, and novelty [9][10]. Meanwhile, to measure usability in the OVO application, the system usability scale is used by analyzing five categories: acceptability ranges, grade scales, and subjective ratings [11][12]. User Experience Questionnaire is a questionnaire that provides an overview of the level of user satisfaction based on user experience. The User Experience Questionnaire has six scales with 26 statements. This scale includes attractiveness, perceptivity, dependability, efficiency, stimulation, and novelty. The user experience questionnaire has been tested in several cases to provide an overview of user satisfaction. It usually takes 3-5 minutes to read and complete the user experience questionnaire. One of the other advantages of the user experience questionnaire is the free availability of this questionnaire which is available in the Indonesian language version. User experience questionnaire data analysis was carried out using the UEQ Data Analysis Tool, which compared the value of each aspect with existing product data [13]. John Brooke created the SUS questionnaire at the Digital Equipment Corporation in April 1986 [14]. This questionnaire measures five crucial aspects. The first aspect is the effectiveness of using the technology to achieve your goals. The second aspect is efficiency, namely how much use effort and resources are expended in achieving these goals. The third aspect is satisfaction, where how satisfying is the user experience

2. Research Methods  
This study aims to assess and quantify the user experience and usability of the OVO application by using the User Experience Questionnaire (UEQ) and System Usability Scale (SUS). The research methodology and process are illustrated in Figure 1. A. Research Design The research design in this article is evaluative and descriptive. It aims to measure and explain the success of a specific product, process, or activity, reaching conclusions to be drawn about its feasibility, relevance, effectiveness, and efficiency. This design provides a framework for assessing and analyzing the success of a particular product, process, or activity so that conclusions can be drawn about its feasibility, relevance, effectiveness, and efficiency. B. Research Process The research framework used as a reference in the research to be carried out is shown in Figure 1. Figure 1: Research Process

### Comments

Resolved

**Author**  
The introduction to your article presents a detailed overview of the shift from cash-based transactions to electronic transactions and the significance of

Resolved

**Author**  
What is the research design of this article? This is only an explanation of 'what is a research design'.

Resolved

**Author**  
Please change this to English

Resolved

**Author**  
Please expand a bit more on why you

application. This study uses the Laposow formula to determine the number of samples with an unknown population [16]. Through the Laposow formula, the number of samples to be taken is at least 100 respondents. The sampling technique selected in this study is Non-Probability Sampling, namely Purposive Sampling, a sampling technique selected based on specific criteria that the researcher wants. The criteria used in this study are as follows:  
a. OVO application users;  
b. Located in Indonesia;  
c. Minimum age of 15 years.  
The purposive Sampling method was chosen to ensure a targeted selection of participants who meet the specific criteria essential for this study. By utilizing this method, the researcher aimed to include OVO application users from various backgrounds, including diverse age groups, income levels, and socioeconomic statuses. This approach allows researchers to gather a wide range of perspectives and experiences, contributing to a more comprehensive assessment of the user experience and usability of the OVO application. The Purposive Sampling method was chosen to ensure a targeted selection of participants who meet the specific criteria essential for this study. The method that the researcher used to select OVO application users from various backgrounds, including diverse age groups, income levels, and socioeconomic statuses. This approach allows researchers to gather a wide range of perspectives and experiences, contributing to a more comprehensive assessment of the user experience and usability of the OVO application. Although the non-probability nature of purposive sampling does not guarantee a representative sample of the entire OVO user base, researchers made efforts to ensure diversity within the selected sample. The researcher's intention was to include participants from different demographics to increase the generalizability and relevance of the findings. The researcher reached out to potential participants through various channels, including social media platforms, online communities, and direct invitations to OVO users who matched the researcher's criteria. By employing this approach, researchers aimed to capture a broad spectrum of users and minimize potential biases that may arise from a more limited sample. Although the non-probability nature of Purposive Sampling does not guarantee a representative sample of the entire OVO user base, researchers made efforts to ensure diversity within the selected sample. The researcher's intention was to include participants from different demographics to increase the generalizability and relevance of the findings. The researcher reached out to potential participants through various channels, including social media platforms, online communities, and direct invitations to OVO users who matched the researcher's criteria. By employing this approach, researchers aimed to capture a broad spectrum of users and minimize potential biases that may arise from a more limited sample. Although the non-probability nature of Purposive Sampling does not guarantee a representative sample of the entire OVO user base, researchers made efforts to ensure diversity within the selected sample. The researcher's intention was to include participants from different demographics to increase the generalizability and relevance of the findings. The researcher reached out to potential participants through various channels, including social media platforms, online communities, and direct invitations to OVO users who matched the researcher's criteria. By employing this approach, researchers aimed to capture a broad spectrum of users and minimize potential biases that may arise from a more limited sample.

3. Data Collection  
All data were collected through a survey of predetermined respondents. In this study, the instrument used was a questionnaire. The questionnaire included questions about the respondent's identity, the general use of the OVO application, 36 user experience questionnaire statements, and five system usability scale statements. To minimize potential biases, researchers implemented several measures in the data collection process. All the stage data collection was carried out from predetermined respondents. The researcher included questions about the respondent's identity, the general use of the OVO application, 36 user experience questionnaire statements, and five system usability scale statements. To minimize potential biases, researchers implemented several measures in the data collection process. All the stage data collection was carried out from predetermined respondents. The researcher included questions about the respondent's identity, the general use of the OVO application, 36 user experience questionnaire statements, and five system usability scale statements. To minimize potential biases, researchers implemented several measures in the data collection process. All the stage data collection was carried out from predetermined respondents. The researcher included questions about the respondent's identity, the general use of the OVO application, 36 user experience questionnaire statements, and five system usability scale statements. To minimize potential biases, researchers implemented several measures in the data collection process.

### Comments

Resolved

"what is a research design".

Resolved

**Author**  
Please change this to English

Resolved

**Author**  
Please expand a bit more on why you chose the Purposive Sampling method specifically and how it benefits the study. An explanation on how you

Resolved

**Author**  
A mention of how you addressed any potential bias, particularly response and non-response bias common in online surveys, would make the methodology more robust. An explanation of how you handled incomplete or inappropriate responses would add depth to your data collection process and increase the validity of your study.

strategy to ensure a representative sample. The researcher reached out to OVO application users through various channels, including social media platforms such as WhatsApp, Telegram, YouTube, and Instagram. By utilizing multiple platforms, researchers aimed to reduce the risk of excluding certain user groups that may have different usage patterns or experiences. Additionally, the researcher encouraged participants to share the survey link with their acquaintances who were OVO application users, which helped the researcher reach a wider audience. Finally, to address response bias common in online surveys, researchers employed a diverse recruitment strategy to ensure a representative sample. Researchers reached out to OVO application users through various channels, including social media platforms such as WhatsApp, Telegram, Twitter, Instagram, etc. By utilizing multiple platforms, researchers aimed to reduce the risk of excluding certain user groups who may have different usage patterns or experiences. Additionally, researchers encouraged participants to share the survey link with their acquaintances who were OVO application users, which helped researchers reach a wider audience.

Secondly, to mitigate non-response bias, researchers made efforts to maximize the response rate and minimize missing data. Extended the survey duration from February 9 to March 10, 2023, allowing sufficient time for participants to complete the questionnaire. The researcher also sent out reminders at regular intervals to encourage participants to participate. Moreover, to handle incomplete or inappropriate responses, researchers implemented additional checks within the online survey platform (Google Forms) to ensure that all required questions were answered and responses within a reasonable time frame. In the case of incomplete or inappropriate responses, the researcher followed up with the final analysis to maintain the validity of the study. Secondly, to mitigate non-response bias, researchers made efforts to maximize the response rate and minimize missing data. They extended the survey duration from 9 February to 10 March 2023, allowing sufficient time for participants to complete the questionnaire. Additionally, researchers sent out reminders at regular intervals to encourage participants to participate. Moreover, to handle incomplete or inappropriate responses, researchers implemented additional validation checks within the online survey platform (Google Forms) to ensure that all required questions were answered and responses within a reasonable time frame.

The samples obtained during the deployment were 166 respondents, but 11 were not users of the OVO application, resulting in a remaining sample size of 155 respondents. The User Experience Questionnaire is a questionnaire that provides an overview of the level of user satisfaction based on user experience. The user experience questionnaire has been tested in several cases to provide an overview of user satisfaction. It usually takes 5-5 minutes to read and complete the user experience questionnaire. One of the advantages of the user experience questionnaire is its ease of use, which is available in the Indonesian language version. User experience questionnaire data analysis was carried out using the SPSS Data Analysis Tool, which compared the value of each aspect with control product data. The samples obtained during the deployment were 166 respondents, but 11 were not users of the OVO application, resulting in a remaining sample size of 155 respondents. User Experience Questionnaire is a questionnaire that provides an overview of the level of user satisfaction based on user experience. The user experience questionnaire has been tested in several cases to provide an overview of user satisfaction. It usually takes 5-5 minutes to read and complete the user experience questionnaire. One of the other advantages of the user experience questionnaire is the ease of availability of this questionnaire which is available in the Indonesian language version. User experience questionnaire data analysis was carried out using the SPSS Data Analysis Tool, which compared the value of each aspect with control product data [11].

The user experience questionnaire consisted of 10 items designed to reduce questions, as shown in Table 1. The user experience questionnaire used a 5-point semantic differential scale. Respondents were asked to rate from 1 to 7 on a 10-item indicator scale according to their subjective assessment. The User Experience Questionnaire (UEQ) is used to measure user experience consisting of 26 question components covering various aspects. The user experience questionnaire consisted of 26 indicator questions, as shown in Table 1. The user experience questionnaire used a 5-point semantic differential scale. Respondents were asked to assess their subjective assessment. The User Experience Questionnaire (UEQ) is used to measure user experience consisting of 26 question components covering various aspects. The user experience questionnaire consisted of 26 indicator questions, as shown in Table 1. The user experience questionnaire used a 5-point semantic differential scale. Respondents were asked to assess their subjective assessment. The User Experience Questionnaire (UEQ) is used to measure user experience consisting of 26 question components covering various aspects.

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Comments

New

**Author**  
A mention of how you addressed any potential bias, particularly response and non-response bias common in online surveys, would make the methodology more robust. An explanation of how you handled incomplete or inappropriate responses would add depth to your data collection process and increase the validity of your study.

Resolved

**Author**  
A brief discussion on how you mitigated any potential errors or bias in your data analysis, and how you handled any outliers or missing data.

Resolved

**Author**  
The approach of analyzing data inconsistencies using the UEQ Data Analysis Tools Version 12 is a valuable

Resolved

questionnaires will be distributed via social media such as Whatsapp, Telegram, Twitter and Instagram. Questionnaires will be created and filled out using Google Forms. The dissemination was done from 9 February 2023 to 16 March 2023. The samples obtained during the deployment were 166 respondents, but 11 were not users of the OVO application, so the remaining 155 respondents.

The user experience questionnaire consists of 6 scales divided into 26 indicator questions, as shown in Table 1. The user experience questionnaire uses a 7-point semantic differential scale. Respondents were asked to assess from 1 to 7 on 26 UEQ indicator items according to their subjective assessment. The User Experience Questionnaire (UEQ) is used to measure user experience consisting of 26 question components covering aspects [17].

- Attractiveness**  
The product should look attractive, enjoyable, friendly, and pleasant.
- Efficiency**  
I should perform my tasks with the product fast, efficient, and in a pragmatic way.
- Perspiciuity**  
The product should be easy to understand, clear, simple, and easy to learn.
- Dependability**  
The interaction with the product should be predictable, secure, and meets my expectations.
- Stimulation**  
Using the product should be interesting, exciting, and motivating.
- Novelty**  
The product should be innovative, inventive, and creatively designed.

The components of the UEQ questions based on the aspects assessed are shown in Table 1.

Table 1. UEQ Testing Instruments

Scale	Indicator	Item	
Attractiveness	Inconvenient	Enjoyable	ATT1
	Good	Bad	ATT2
	Dull	Gratifying	ATT3
	Uncomfortable	Comfortable	ATT4
	Attractive	Unattractive	ATT5
Perspicuity	User-friendly	User-unfriendly	ATT6
	Not understood	Understandable	PER1
	Easily understood	Hardly understood	PER2
Efficiency	Complicated	Simple	PER3
	Clear	Confusing	PER4
	Fast	Slow	EFF1
	Inefficient	Efficient	EFF2
	Inconvenient	Practical	EFF3

Scale	Indicator	Item	
Stimulation	Boredom	Less bored	ST11
	Tedious	Engaging	ST12
	Unappealing	Interesting	ST13
	Motivational	Unmotivating	ST14
Novelty	Creative	Monotonous	NOV1
	Unnovel	Novel	NOV2
	Commonplace	Leading-edge	NOV3
	Conservative	Innovative	NOV4

John Brooke created the SUS questionnaire at the Digital Equipment Corporation in England in 1986. John Brooke created the SUS questionnaire at the Digital Equipment Corporation in England in 1986 [14]. This questionnaire measures three crucial aspects. The first aspect is the effectiveness of using this technology to achieve user goals. The second aspect is efficiency, namely how much user effort and resources are expended in achieving these goals. The third aspect is satisfaction, or how satisfying is the user experience. This questionnaire measures three crucial aspects. The first aspect is the effectiveness of using this technology in achieving user goals. The second aspect is efficiency, namely how much user effort and resources are expended in achieving these goals. The third aspect is satisfaction, where how satisfying is the user experience [15]. The system usability scale questionnaire consists of 10 statements, as shown in Table 2. The system usability scale questionnaire uses a 5-point Likert scale. Respondents were asked to provide an assessment of "Strongly Disagree", "Disagree", "Neutral", "Agree", and "Strongly Agree" on the 10 SUS statements according to their subjective assessment. The System Usability Scale (SUS) measures the usability attributes of the OVO application, namely aspects of effectiveness, efficiency, satisfaction, satisfaction, easy to learn, ease to remember and few errors. SUS gives an overall score between 0 and 100. The SUS half section (odd statements, i.e., 1, 3, 5, 7, and 9) describes a positive evaluation (items with positive polarity). The other half of the sections (even statements, i.e., 2, 4, 6, 8, and 10) depict negative evaluations (items with negative polarity). For items with positive polarity, answers were coded as 0 to 4 from disagreement to agreement. Whereas for items with negative polarity, the answers are coded from 4 to 0 [18]. The list of SUS statements is shown in Table 2.

Table 1.2. SUS Testing Instruments [14]

Questions	Item
I think that I would like to use this system frequently	SUS1
I found the system unnecessarily complex	SUS2
I thought the system was easy to use	SUS3
I think that I would need the support of a technical person to be able to use this system	SUS4
I found the various functions in this system were well interrelated	SUS5

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Questions	Item
I needed to learn a lot of things before I could get going with this system	SUS10

#### E. Data Analysis

At this stage, data inconsistencies analysis, quantitative data analysis, demographic analysis, and descriptive statistical analysis of the data that has been obtained are carried out. The data obtained will be processed using IBM SPSS Statistics 25, UEQ Data Analysis Tool, and Microsoft Excel. Additionally, measures were taken to mitigate potential errors or biases in the analysis and handle outliers or missing data. Additionally, measures were taken to mitigate potential errors or biases in the analysis and to handle outliers or missing data.

To address potential errors or biases in the data analysis process, several steps were taken. Firstly, data inconsistencies were analyzed using the UEQ Data Analysis Tool Version 12. This analysis involved assessing the seriousness of respondents' answers to the questionnaire and identifying any suspicious data. Specifically, a critical value greater than 2 and a critical length value exceeding 15 were used as criteria to detect errors in questionnaire completion. In cases where such errors were identified, the respective data points were removed from the analysis. To address potential errors or biases in the data analysis process, several steps were taken. Firstly, data inconsistencies were analyzed using the UEQ Data Analysis Tool Version 12. This analysis involved assessing the seriousness of respondents in answering the questionnaire and identifying any suspicious data. Specifically, a critical value greater than 2 and a critical length value exceeding 15 were used as criteria to detect errors in questionnaire completion. In cases where such errors were identified, the respective data points were removed from the analysis. In analyzing data inconsistencies using the UEQ Data Analysis Tool Version 12. At this stage, the seriousness of the respondents was tested in answering the questionnaire and detecting suspicious data. If the critical value is >2 and the critical length value is >15, this indicates an error in filling out the questionnaire, and it is better to delete the data.

In the analysis of quantitative data, a validity test and a reliability test will be carried out on the data that has been obtained. The validity test was carried out by looking at the Pearson correlation value of each indicator for each variable. In contrast, the reliability test was carried out by looking at Cronbach's alpha ( $\alpha$ ) value of each research variable.

Regarding demographic analysis, respondent data was categorized based on gender, age, duration of use, and location of use. The information allowed for a

presented in the form of charts or graphs to facilitate comprehension and interpretation. In the analysis of demographic data, respondent data will be grouped based on gender, age, duration of use, and frequency of use. The data will then be represented as a chart or graph.

In the descriptive statistical analysis using UEQ Data Analysis Tool Version 12 and Microsoft Excel. The data presented in this descriptive statistical test shows data that can be seen from the mean, which is the average value of each measured scale; the maximum, which is the highest value of each measured scale; the minimum, which is the lowest value of each measured scale, and the standard deviation used to determine the distribution of data from the sample and used to describe each research variable.

To handle outliers or missing data, specific procedures were implemented. Outliers, which are data points that deviate significantly from the overall pattern, were identified and assessed for their impact on the analysis results. Depending on the nature and extent of the outliers, options such as excluding them from the analysis or conducting sensitivity analyses were considered. Additionally, missing data points were identified, and appropriate strategies, such as imputation techniques or the exclusion of incomplete cases, were employed to ensure a comprehensive analysis. To handle outliers or missing data, specific procedures were implemented. Outliers, which are data points that deviate significantly from the overall pattern, were identified and assessed for their impact on the analysis results. Depending on the nature and extent of the outliers, options such as excluding them from the analysis or conducting sensitivity analyses were considered. Additionally, missing data points were identified and appropriate strategies, such as imputation techniques or exclusion of incomplete cases, were employed to ensure a comprehensive analysis.

By implementing these measures, researchers aimed to mitigate potential errors or biases in the data analysis process and address outliers or missing data effectively. These steps enhance the robustness and reliability of the findings, providing a more comprehensive assessment of the user experience and usability of the OVO application. By implementing these measures, researchers aimed to mitigate potential errors or biases in the data analysis process and address outliers or missing data effectively. These steps enhance the robustness and reliability of the findings, providing a more comprehensive assessment of user experience and usability in the OVO application.

Several rules must be considered when transforming

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- Each answer in the UEQ questionnaire is rated on a scale of 1 to 7, indicating the level of user acceptance from "negative" to "positive".
- These items have a scale from -3 to +3. Thus, -3 represents the most negative answer, 0 is a neutral answer, and +3 is the most positive answer [19].

After the data transformation, only the average or mean assessment can be carried out for each scale or question item on the UEQ from each respondent's answer. The following are the rules for the average or mean rating scale in UEQ which can be seen in Table 5.

Mean Value Range	Explanation
>0.8	Positive Evaluation
0.8-0.4	Neutral Evaluation
<0.4	Negative Evaluation

If the mean value of an item is more significant than 0.8, then the item will enter into the positive evaluation category and, in the diagram, is in the green area. If the mean value of an item is between 0.8 to 0.4, then the item will fall into the normal or neutral evaluation category and, in the diagram, is in the yellow area. Meanwhile, if the mean value of an item is less than 0.4, then the item will enter into the negative evaluation category and in the diagram, it is in the red area.

Then several rules must be considered when calculating scores on questionnaire data using SUS:

- For every odd-numbered question (1, 3, 5, 7, 9), the score obtained from user responses will be reduced by 1.
 
$$\text{odd weight} = x_i - 1 \quad (1)$$
- Each even-numbered question (2, 4, 6, 8, 10) will have its final score calculated by subtracting the user's score from 5.
 
$$\text{even weight} = 5 - x_i \quad (2)$$
- The SUS score is obtained by summing up the scores of each question and then multiplying it by 2.5.
 
$$\text{SUS Score} = (\text{odd weight} + \text{even weight}) \times 2.5 \quad (3)$$
- The scoring rules mentioned above apply to one respondent. For multiple respondents, the SUS scores of each respondent are summed up and then divided by the number of respondents to calculate the average SUS score.

### 3. Results and Discussions

#### A. Analysis of Data Inconsistencies

To ensure the reliability of the responses, the study employed UEQ Data Analysis Tools Version 12 to analyze data inconsistencies. This approach adds value to the study by filtering out potentially careless or insincere responses, thereby enhancing the credibility of the results. By setting critical value parameters, the seriousness of respondents' responses to the questionnaire was assessed, and any hypothetical or insincere responses were identified, along with inconsistencies. Based on these criteria, it is recommended to remove such data from the analysis. This rigorous step strengthens the methodological aspects of the study and underscores the significance of accurate and thoughtful input from respondents in deriving reliable and insightful conclusions. To ensure the reliability of the responses, the study employed UEQ Data Analysis Tools Version 12 to analyze data inconsistencies. This approach adds value to the study by filtering out potentially careless or insincere responses, thereby enhancing the credibility of the results. By setting critical value parameters, the seriousness of respondents in answering the questionnaire was assessed, and any hypothetical or insincere responses were identified, along with inconsistencies. Based on these criteria, it is recommended to remove such data from the analysis. This rigorous step strengthens the methodological aspects of the study and underscores the significance of accurate and thoughtful input from respondents in deriving reliable and insightful conclusions. The analysis of inconsistencies in the data is conducted using UEQ Data Analysis Tools Version 12, specifically, the Inconsistencies tab. Inconsistencies are utilized to assess respondents' seriousness in answering the questionnaire, determine whether they responded honestly—or without seriousness, and detecting suspicious data. If the critical value is more significant than two and the critical length exceeds 15, it indicates errors in completing the questionnaire, and it is recommended to remove such data.

Table 10. Inconsistencies Data

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#### COMMENTS

New

non-response bias common in online surveys, would make the methodology

Resolved

Author

A brief discussion on how you mitigated any potential errors or bias in your data analysis, and how you handled any outliers or missing data.

Resolved

Author

The approach of analyzing data inconsistencies using the UEQ Data Analysis Tools Version 12 is a valuable step that ensures the reliability of the responses. By setting critical value parameters, you enhance the credibility of your results, filtering out potentially careless or insincere responses. This rigorous step adds to the methodological strength of your study, emphasizing the importance of accurate, thoughtful input from respondents for reliable, insightful conclusions.



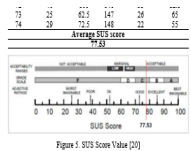


Figure 5. SUS Scores Value [10]

Table 23 and Figure 5 summarize SUS score calculations from the questionnaires distributed to 148 respondents, resulting in an average or mean score of 77.53 according to the System Usability Scale (SUS) method.

After obtaining the SUS score, the next step is interpreting the result. There are three perspectives to determine the interpretation of the SUS score calculations:

a. Acceptability  
Acceptability ranges consist of three levels: not acceptable, marginal (low and high), and acceptable. Acceptability is used to assess the level of user acceptance of the application.

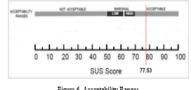


Figure 6. Acceptability Ranges

In the calculation of the SUS score, the previously obtained score was 77.53, indicating that the user acceptance level of the OVO application is categorized as "ACCEPTABLE".

b. Grade  
The grade scale consists of A, B, C, D, and F, which are used to determine the grade level of the application.

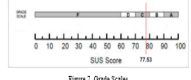


Figure 7. Grade Scale

c. Adjective  
Adjective ratings consist of the categories worst imaginable, poor, ok, good, and best imaginable. Adjective ratings are used to determine the rating of the application.

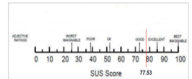


Figure 8. Adjective Rating

In the calculation of the SUS score, the previously obtained score was 77.53, indicating that the OVO application falls under the "GOOD" category.

E. Improvement Recommendations

Based on the evaluation of the user experience conducted using the User Experience Questionnaire (UEQ) method and processed with UEQ Data Analysis Tool Version 11, the following recommendations can be made for enhancing the OVO application. Based on the evaluation of user experience conducted using the User Experience Questionnaire (UEQ) method, processed using UEQ Data Analysis Tool Version 11, the following recommendations can be given for the OVO application:

- a. Consider incorporating more innovative, cutting-edge, and creative services or features into the OVO application. This could involve adopting new and innovative features that align with current trends in the industry. These additions will help improve novelty, ensuring the application stays up-to-date and provides a unique user experience. Consider incorporating more innovative, cutting-edge, and creative services or features into the OVO application, such as adopting new and innovative features that align with the current trends. It will help improve novelty, ensuring the application stays up-to-date and provides a unique user experience.
- b. Enhance the inclusion of more engaging services or features within the OVO application. For instance, consider incorporating gamification

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COMMENTS

non-response bias common in online surveys, would make the methodology

Resolved

Author  
A brief discussion on how you mitigated any potential errors or bias in your data analysis, and how you handled any outliers or missing data.

Resolved

Author  
The approach of analyzing data inconsistencies using the UEQ Data Analysis Tools Version 12 is a valuable

Resolved

Author  
Overall, these recommendations are well-considered and likely to effectively address the issues identified in the user experience evaluation.

elements that allow users to earn OVO Points or integrating captivating animations and enjoyable sound effects. Such enhancements will enhance the stimulation aspect of the application, making the overall user experience more enjoyable and interactive. Explore the inclusion of more engaging services or features within the OVO application. For instance, consider incorporating gamification elements that allow users to earn OVO Points or integrate captivating animations and enjoyable sound effects. Such enhancements will enhance the stimulation aspect of the application, making the overall user experience more enjoyable and interactive. Offer more engaging services or features in the OVO application, such as incorporating gamification elements to earn OVO Points or adding captivating animations and enjoyable sound effects. It will enhance the stimulation aspect, making the user experience more enjoyable and interactive.

By implementing these recommendations, it is anticipated that the OVO application can address the identified issues and provide a more satisfactory user experience.

#### 4. Conclusion

The user experience and usability evaluation using the User Experience Questionnaire (UEQ) and System Usability Scale (SUS) has been successfully conducted, involving 148 competent respondents who assessed the application based on gender, age, duration of usage, and frequency of usage. The benchmark results for the six aspects of UEQ show that one aspect, efficiency, falls into the "good" category with a mean value of 1.55. Additionally, four aspects, namely attractiveness (mean: 1.56), perspicuity (mean: 1.67), dependability (mean: 1.33), and stimulation (mean: 1.16), are classified as "above average" categories. However, one aspect, novelty, falls into the "below average" category with a mean value of 0.64. Regarding the measurement of OVO application usability using the System Usability Scale (SUS) method, the obtained score is 77.53. This score falls within the "Acceptable" range in the Acceptability Ranges category, a "C" grade in the Grade Scale category, and is rated as "Good" in the Adjective Ratings category. The user experience and usability evaluation using the User Experience Questionnaire (UEQ) and System Usability Scale (SUS) has been successfully conducted, involving 148 competent respondents who assessed the application based on gender, age, duration of usage, and frequency of usage. The benchmark results for the six aspects of UEQ show that one aspect, efficiency, falls into the

classified as "above average" categories. However, one aspect, novelty, falls into the "below average" category with a mean value of 0.64. Regarding the measurement of OVO application usability using the System Usability Scale (SUS) method, the obtained score is 77.53. This score falls within the "Acceptable" range in the Acceptability Ranges category, a "C" grade in the Grade Scale category, and is rated as "Good" in the Adjective Ratings category.

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## Assessing User Experience and Usability in the OVO Application: Utilizing the User Experience Questionnaire and System Usability Scale for Evaluation

### Abstract

The OVO application, despite having a large user base in Indonesia, has received low ratings compared to other digital wallet apps on the Google Play Store and App Store. Users frequently complain about the user experience, which greatly affects their overall satisfaction. This study evaluates the user experience and usability of the OVO application using the User Experience Questionnaire (UEQ) and System Usability Scale (SUS). The UEQ results show that efficiency is excellent (1.55), while attractiveness, perspicuity, dependability, and stimulation are above average (1.56, 1.67, 1.33, and 1.16, respectively). However, the novelty aspect falls below average (0.64), indicating a need for improvement. The SUS score is 77.53, classifying the app as "Acceptable" with a "C" grade and an overall "Good" rating. Addressing the identified shortcomings can enhance the user experience and usability, ultimately improving user satisfaction. This study contributes valuable empirical data to the field, offering insights for researchers and practitioners in assessing the user experience and usability of mobile applications.

*Keywords:* digital wallet, user experience, usability, user experience questionnaire, system usability scale

### 1. Introduction

Today's modern transactions continue to shift from cash-based transactions to electronic-based transactions. Equal connectedness through Information and Communication Technology (ICT) has contributed significantly to the market transformation of their financial and operational businesses. The trend towards digitization and internet use has brought about significant changes in how the global economy operates. The emergence of various financial technology (FinTech) applications is enabling consumers to go beyond conventional cash-based payment systems. Digital payments are becoming the norm in people's daily lives. This rapid development in the financial sector led to the invention of many digital payment technologies, where payers and payees use digital applications to send and receive money. As such, payment systems are rapidly changing from coin and paper-based cash to convenient, fast and cost-effective forms of digital payments [1]. The development of non-cash transactions is expected to increase yearly globally. In 2022, the growth of non-cash transactions was estimated to reach 1,045.5 billion USD, with the highest growth in developing countries in Asia and the

Middle East [2]. Digital wallets are now necessary for people to carry out their activities and meet their needs [3][4]. This positive trend must be followed by good user experience and application usability [5]. E-Wallet is an electronic service that functions to store data and as a payment instrument. In principle, E-Wallet is similar to mobile banking or Internet banking services, but the depositor does not use a bank but a digital wallet. E-wallet applications in Indonesia include OVO, Dana, GoPay, ShopeePay, Jenius, LinkAja, and others [6].

OVO is an electronic wallet application in Indonesia that users have used since 2016. OVO offers easy payments for phone credit, data packages and insurance. Nevertheless, OVO got some negative reviews on Google Play and App Store. One of the negative reviews that users feel about the OVO application is a user experience problem which causes the application's user experience to work better than the user expects. Some users complained that the OVO application response process was slow and that the payment process using OVO took too long for them. **Negative reviews on OVO have significant implications for its overall performance and user engagement. They can harm OVO's reputation, deter potential users,**

decrease user engagement and retention, impact competitiveness, and damage the brand's image. Addressing these negative reviews is crucial for OVO's success in the digital payment industry. The application's usability includes the user experience issues experienced by OVO users. Usability refers to how quickly and easily application users can complete tasks [7].

User Experience (UX) focuses on the overall experience users have when interacting with a product. Usability measures how easy and effective it is to use. Both are evaluated in the field through methods such as user experience questionnaires, system usability scales, usability testing, heuristic evaluation, user surveys, analytics, A/B testing, expert reviews, etc. These methods provide insights into user satisfaction, behavior, and areas for improvement.

By incorporating UEQ and SUS, researchers aim to gain valuable insights into the user experience and usability of the OVO application, thereby enriching their findings and contributing to a more comprehensive understanding of the topic. To support the researcher's assertions, the researcher has included relevant examples and case studies that illustrate the successful application of UEQ and SUS in similar research studies or within similar application contexts. These examples serve as tangible evidence of the efficacy and relevance of these methods in evaluating user experience and usability.

Research using the user experience questionnaire method and system usability scale was conducted by Guntur Eka Saputra, Rakhmi Khalida, and Ratu Nurmalika from Gunadarma University entitled "Evaluation of User Experience TLX Training Gate for Competitive Programming Learning using User Experience Questionnaire and System Usability Scale". In this study, the measurement results were obtained on 6 UEQ scales, namely the attractiveness scale (1.27), perspicuity (0.85), efficiency (1.12), dependability (1.13), stimulation (1.35) and novelty (0.81). All scales get positive impressions; the SUS score is 75 [8].

Furthermore, research was conducted by Nina Setiyawati and Dwi Hosanna Bangkalang entitled "The Comparison of Evaluation on User Experience and Usability of Mobile Banking Applications Using User Experience Questionnaire and System Usability Scale". In this study, the 6 UEQ scale measurements on four mobile banking applications received a positive impression on each scale except for BNI Mobile (Efficiency and Novelty) and Livin (Novelty), which received a neutral impression. SUS scores were obtained for the four mobile banking applications, namely BCA Mobile (72.76), Octo Mobile (71.47), BNI Mobile (71.49), and Livin (72.4) [5].

This study aims to evaluate the user experience and measure the usability of the OVO application. The user experience in the OVO application is evaluated using a user experience questionnaire by analyzing six scales or aspects, namely attractiveness, perspicuity, dependability, efficiency, stimulation, and novelty [9][10]. Meanwhile, to measure usability in the OVO application, the system usability scale is used by analyzing three categories: acceptability ranges, grade scales, and adjective ratings [11][12].

## 2. Research Methods

This study aims to assess and quantify the user experience and usability of the OVO application by employing the User Experience Questionnaire (UEQ) and System Usability Scale (SUS). The research methodology and process are illustrated in Figure 1.

### A. Research Design

The research design in this article is evaluative and descriptive. It aims to measure and explain the success of a specific product, program, or activity, allowing conclusions to be drawn about its feasibility, relevance, effectiveness, and efficiency. This design provides a framework for assessing and analyzing the subject of the study in order to gain insights into its various aspects and evaluate its overall performance. By employing an evaluative and descriptive research design, the researchers can gather data, analyze it, and draw meaningful conclusions about the topic under investigation.

### B. Research Process

The research framework used as a reference in the research to be carried out is shown in Figure 1.

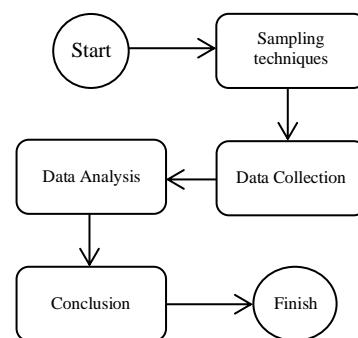


Figure 1. Research Process

Figure 1 explains that the research process begins with the sampling technique and ends with drawing conclusions. Detailed information about each research activity will be presented in the subsequent discussion subsection.

### C. Sampling Technique

This stage aims to determine the sample and sampling technique used during the study. The population that is the focus of this research are those who use the OVO application. This study uses the Lemeshow formula to determine the number of samples with an unknown population [16]. Through the Lemeshow formula, the number of samples to be taken is at least 100 respondents. The sampling technique used in this study is Non-Probability Sampling, namely Purposive Sampling, a sampling technique selected based on specific criteria that the researcher wants. The criteria used in this study are as follows:

- a. OVO application users.
- b. Located di Indonesia.
- c. Minimum age of 15 years.

The purposeful Sampling method was chosen to ensure a targeted selection of participants who meet the specific criteria essential for this study. By utilizing this method, the researcher aimed to include OVO application users from various backgrounds, including diverse age groups, regions within Indonesia, etc. This approach allows researchers to gather a wide range of perspectives and experiences, contributing to a more comprehensive assessment of the user experience and usability of the OVO application.

Although the non-probability nature of purposeful Sampling does not guarantee a representative sample of the entire OVO user base, researchers made efforts to ensure diversity within the selected sample. The researcher's intention was to include participants from different demographics to increase the generalizability and relevance of our findings. The researcher reached out to potential participants through various channels, including social media platforms, online communities, and direct invitations to OVO users who matched the researcher's criteria. By employing this approach, researchers aimed to capture a broad spectrum of users and mitigate potential biases that may arise from a more limited sample.

It is important to note that while the researcher's sample may not represent the entire population of OVO application users, the focus of this study is to assess user experience and usability rather than provide statistically representative data. Nonetheless, the insights gained from this diverse sample will contribute valuable findings and recommendations for enhancing the user experience and usability of the OVO application.

#### D. Data Collection

At this stage, data collection was carried out from predetermined respondents. In this study, the instrument used was a questionnaire. The questionnaire included questions about the respondent's identity, the general use of the OVO application, 26 user experience questionnaire statements, and ten system usability scale statements. To minimize potential biases, researchers

implemented several measures in the data collection process.

Firstly, to address the response bias common in online surveys, researchers employed a diverse recruitment strategy to ensure a representative sample. The researcher reached out to OVO application users through various channels, including social media platforms such as WhatsApp, Telegram, Twitter, Instagram, etc. By utilizing multiple platforms, researchers aimed to reduce the risk of excluding certain user groups that may have different usage patterns or experiences. Additionally, the researcher encouraged participants to share the survey link with their acquaintances who were OVO application users, which helped the researcher reach a wider audience.

Secondly, to mitigate non-response bias, researchers made efforts to maximize the response rate and minimize missing data. Extended the survey duration from February 9 to March 16, 2023, allowing participants ample time to complete the questionnaire at their convenience. The researcher also sent out reminders at regular intervals to encourage respondents to participate. Moreover, to handle incomplete or inappropriate responses, researchers implemented validation checks within the online survey platform (Google Forms) to ensure that all required questions were answered and responses within a reasonable range were recorded. In the case of incomplete or inappropriate responses, the researcher excluded them from the final analysis to maintain the validity of the study.

The samples obtained during the deployment were 166 respondents, but 11 were not users of the OVO application, resulting in a remaining sample size of 155 respondents. The User Experience Questionnaire is a questionnaire that provides an overview of the level of user satisfaction based on user experience. The user experience questionnaire has been tested in several cases to provide an overview of user satisfaction. It usually takes 3-5 minutes to read and complete the user experience questionnaire. One of the other advantages of the user experience questionnaire is its free availability, which is available in the Indonesian language version. User experience questionnaire data analysis was carried out using the UEQ Data Analysis Tool, which compared the value of each aspect with existing product data [13].

The user experience questionnaire consisted of six scales divided into 26 indicator questions, as shown in Table 1. The user experience questionnaire used a 7-point semantic differential scale. Respondents were asked to rate from 1 to 7 on 26 UEQ indicator items according to their subjective assessment. The User Experience Questionnaire (UEQ) was used to measure user experience, consisting of 26 question components covering various aspects [17]:



- a. Attractiveness  
The product should look attractive, enjoyable, friendly, and pleasant.
- b. Efficiency  
I should perform my tasks with the product fast, efficient, and in a pragmatic way.
- c. Perspicuity  
The product should be easy to understand, clear, simple, and easy to learn.
- d. Dependability  
The interaction with the product should be predictable, secure, and meets my expectations.
- e. Stimulation  
Using the product should be interesting, exiting, and motivating.
- f. Novelty  
The product should be innovative, inventive, and creatively designed.

The components of the UEQ questions based on the aspects assessed are shown in Table 1.

Table 1. UEQ Testing Instruments

Scale	Indicator		Item
Attractiveness	Inconvenient	Enjoyable	ATT1
	Good	Bad	ATT2
	Dislike	Gratifying	ATT3
	Uncomfortable	Comfortable	ATT4
	Attractive	Unattractive	ATT5
	User-friendly	User-unfriendly	ATT6
Perspicuity	Not understood	Understandable	PER1
	Easily understood	Hardly understood	PER2
	Complicated	Simple	PER3
	Clear	Confusing	PER4
Efficiency	Fast	Slow	EFF1
	Inefficient	Efficient	EFF2
	Impractical	Practical	EFF3
	Organized	Disorganized	EFF4
Dependability	Unpredictable	Predictable	DEP1
	Obstruct	Supportive	DEP2
	Safe	Unsafe	DEP3
	Meet expectations	Not meeting expectations	DEP4
Stimulation	Beneficial	Less beneficial	STI1
	Tedious	Engaging	STI2
	Unappealing	Interesting	STI3
	Motivational	Unmotivating	STI4
Novelty	Creative	Monotonous	NOV1
	Innovative	Conventional	NOV2
	Commonplace	Leading-edge	NOV3
	Conservative	Innovative	NOV4

John Brooke created the SUS questionnaire at the Digital Equipment Corporation in England in 1986 [14]. This questionnaire measures three crucial aspects. The first aspect is the effectiveness of using this technology to achieve user goals. The second aspect is efficiency, namely how much user effort and resources are expended in achieving these goals. The third aspect is satisfaction, or how satisfying is the user experience? [15]. The system usability scale questionnaire consists of 10 statements, as shown in Table 2. The system usability scale questionnaire uses a 5-point Likert scale. Respondents were asked to provide an assessment of

"Strongly Disagree", "Disagree", "Neutral", "Agree", and "Strongly Agree" on the 10 SUS statements according to their subjective assessment. The System Usability Scale (SUS) measures the usability attributes of the OVO application, namely aspects of effectiveness, efficiency, satisfaction, satisfaction, easy to learn, ease to remember and few errors. SUS gives an overall score between 0 and 100. The SUS half section (odd statements, i.e. 1, 3, 5, 7, and 9) describes a positive evaluation (items with positive polarity). The other half of the sections (even statements, i.e. 2, 4, 6, 8, and 10) depict negative evaluations (items with negative polarity). For items with positive polarity, answers were coded as 0 to 4 from disagreement to agreement. Whereas for items with negative polarity, the answers are coded from 4 to 0 [18]. The list of SUS statements is shown in Table 2.

Table 1. SUS Testing Instruments [14]

Questions	Item
I think that i would like to use this system frequently	SUS1
I found the system unnecessarily complex	SUS2
I thought the system was easy to use	SUS3
I think that I would need the support of a technical person to be able to use this system	SUS4
I found the various functions in this system were well integrated	SUS5
I thought there was too much inconsistency in this system	SUS6
I would imagine that most people would learn to use this system very quickly	SUS7
I found the system very cumbersome to use	SUS8
I felt very confident using the system	SUS9
I needed to learn a lot of things before I could get going with this system	SUS10

### E. Data Analysis

At this stage, data inconsistencies analysis, quantitative data analysis, demographic analysis, and descriptive statistical analysis of the data that has been obtained are carried out. The data obtained will be processed using IBM SPSS Statistics 25, UEQ Data Analysis Tool, and Microsoft Excel. Additionally, measures were taken to mitigate potential errors or biases in the analysis and handle outliers or missing data.

To address potential errors or biases in the data analysis process, several steps were taken. Firstly, data inconsistencies were analyzed using the UEQ Data Analysis Tool Version 12. This analysis involved assessing the seriousness of respondents answers to the questionnaire and identifying any suspicious data. Specifically, a critical value greater than 2 and a critical length value exceeding 15 were used as criteria to detect errors in questionnaire completion. In cases where such errors were identified, the respective data points were removed from the analysis.

In the analysis of quantitative data, a validity test and a reliability test will be carried out on the data that has been obtained. The validity test was carried out by

looking at the Pearson correlation value of each indicator for each variable. In contrast, the reliability test was carried out by looking at Cronbach's alpha ( $\alpha$ ) value of each research variable.

Regarding demographic analysis, respondent data was categorized based on gender, age, duration of use, and frequency of use. This categorization allowed for a better understanding of potential variations in user experience and usability based on these demographic factors. The results of the demographic analysis were presented in the form of charts or graphs to facilitate comprehension and interpretation.

In the descriptive statistical analysis using UEQ Data Analysis Tool Version 12 and Microsoft Excel. The data presented in this descriptive statistical test shows data that can be seen from the mean, which is the average value of each measured scale; the maximum, which is the highest value of each measured scale; the minimum, which is the lowest value of each measured scale, and the standard deviation used to determine the distribution of data from the sample and used to describe each research variable.

To handle outliers or missing data, specific procedures were implemented. Outliers, which are data points that deviate significantly from the overall pattern, were identified and assessed for their impact on the analysis results. Depending on the nature and extent of the outliers, options such as excluding them from the analysis or conducting sensitivity analyses were considered. Additionally, missing data points were identified, and appropriate strategies, such as imputation techniques or the exclusion of incomplete cases, were employed to ensure a comprehensive analysis.

By implementing these measures, researchers aimed to mitigate potential errors or biases in the data analysis process and address outliers or missing data effectively. These steps enhance the robustness and reliability of the findings, providing a more comprehensive assessment of the user experience and usability of the OVO application.

Several rules must be considered when transforming scores on questionnaire data using UEQ:

- a. Each answer in the UEQ questionnaire is rated on a scale of 1 to 7, indicating the level of user acceptance from "negative" to "positive".
- b. These items have a scale from -3 to +3. Thus, -3 represents the most negative answer, 0 is a neutral answer, and +3 is the most positive answer [19].

After the data transformation, only the average or mean assessment can be carried out for each scale or question item on the UEQ from each respondent's answer. The following are the rules for the average or mean rating scale in UEQ which can be seen in Table 3:

Table 2. UEQ Mean Rating Scale

Mean Value Range	Explanation
> 0.8	Positive Evaluation
-0.8 – 0.8	Neutral Evaluation
< -0.8	Negative Evaluation

If the mean value of an item is more significant than 0.8, then the item will enter into the positive evaluation category and, in the diagram, is in the green area. If the mean value of an item is between -0.8 to 0.8, then the item will fall into the normal or neutral evaluation category and, in the diagram, is in the yellow area. Meanwhile, if the mean value of an item is less than -0.8, then the item will enter into the negative evaluation category and in the diagram, it is in the red area.

Then several rules must be considered when calculating scores on questionnaire data using SUS:

- a. For every odd-numbered question (1, 3, 5, 7, 9), the score obtained from user responses will be reduced by 1..

$$\text{odd weight} = xi - 1 \tag{1}$$

- b. Each even-numbered question (2, 4, 6, 8, 10) will have its final score calculated by subtracting the user's score from 5

$$\text{even weight} = 5 - xi \tag{2}$$

- c. The SUS score is obtained by summing up the scores of each question and then multiplying it by 2.5.

$$\text{SUS Score} = (\text{odd weight} + \text{even weight}) \times 2,5 \tag{3}$$

- d. The scoring rules mentioned above apply to one respondent. For multiple respondents, the SUS scores of each respondent are summed up and then divided by the number of respondents to calculate the average SUS score..

$$\bar{x} = \frac{\sum x}{n} \tag{4}$$

$\bar{x}$  represents the average SUS score,  $\sum x$  denotes the sum of the SUS scores, and n indicates the number of respondents.

### 3. Results and Discussions

#### A. Analysis of Data Inconsistencies

To ensure the reliability of the responses, the study employed UEQ Data Analysis Tools Version 12 to analyze data inconsistencies. This approach adds value to the study by filtering out potentially careless or insincere responses, thereby enhancing the credibility of the results. By setting critical value parameters, the seriousness of respondents responses to the questionnaire was assessed, and any haphazard or insincere responses were identified, along with suspicious data. To identify errors in completing the



questionnaire, a critical value greater than two and a critical length exceeding 15 were considered, indicating inconsistencies. Based on these criteria, it is recommended to remove such data from the analysis. This rigorous step strengthens the methodological aspects of the study and underscores the significance of accurate and thoughtful input from respondents in deriving reliable and insightful conclusions.

Table 3. Inconsistencies Data

No	Scales with inconsistent answers						Critical length Same answer for
	Attractiveness	Perspicuity	Efficiency	Dependability	Stimulation	Novelty	
32		1			1	1	3
44							0
112	1	1		1			3
126		1	1	1		1	4
132	1	1	1	1	1	1	6
136		1	1				4
153	1	1		1	1	1	5

After the update by removing data, 155 respondent data was reduced to only 148.

### B. Quantitative Data Analysis

In this stage, a testing or pilot test is conducted before the actual research to assess the suitability of a questionnaire. Before data collection, the author distributed the questionnaire to 30 respondents to test its validity and reliability. Valid questionnaires with reliable indicators were distributed to respondents who met the criteria and matched the predetermined sample size.

#### a. Validity Test

The validity test is conducted on 30 respondents to assess the validity of the questionnaire. An item is considered valid if the calculated r exceeds the tabled r. The significance level is 0.05 or 5% for 30 respondents, resulting in a tabled r of 0.361. Below are the validity test results for each variable item:

Table 4. Validity test of the attractiveness scale

Item	The calculated r value	The tabled r value	Description
ATT1	0.646	0.361	Valid
ATT2	0.751	0.361	Valid
ATT3	0.877	0.361	Valid
ATT4	0.582	0.361	Valid
ATT5	0.713	0.361	Valid
ATT6	0.538	0.361	Valid

Table 5 demonstrates that all items in the attractiveness scale are deemed valid as the calculated r values are more significant than the tabled r value.

Table 5. Validity test of the perspicuity scale

Item	The calculated r value	The tabled r value	Description
PER1	0.373	0.361	Valid
PER2	0.523	0.361	Valid
PER3	0.464	0.361	Valid
PER4	0.712	0.361	Valid

Table 6 shows that all items in the perspicuity scale are considered valid as the calculated r values are more significant than the tabled r value.

Table 6. Validity test of the efficiency scale

Item	The calculated r value	The tabled r value	Description
EFF1	0.645	0.361	Valid
EFF2	0.713	0.361	Valid
EFF3	0.678	0.361	Valid
EFF4	0.660	0.361	Valid

Table 7 shows that all items in the efficiency scale are deemed valid as the calculated r values are more significant than the tabled r value.

Table 7. Validity test of the dependability scale

Item	The calculated r value	The tabled r value	Description
DEP1	0.720	0.361	Valid
DEP2	0.444	0.361	Valid
DEP3	0.504	0.361	Valid
DEP4	0.788	0.361	Valid

Table 8 shows that all items in the dependability scale are considered valid as the calculated r values are more significant than the tabled r value.

Table 8. Validity test of the stimulation scale

Item	The calculated r value	The tabled r value	Description
STI1	0.666	0.361	Valid
STI2	0.776	0.361	Valid
STI3	0.578	0.361	Valid
STI4	0.741	0.361	Valid

Table 9 displays that all items in the stimulation scale are deemed valid as the calculated r values are more significant than the tabled r value.

Table 9. Validity test of the novelty scale

Item	The calculated r value	The tabled r value	Description
NOV1	0.754	0.361	Valid
NOV2	0.469	0.361	Valid
NOV3	0.615	0.361	Valid
NOV4	0.544	0.361	Valid

Table 10 shows that all items in the novelty scale are considered valid as the calculated r values are more significant than the tabled r value.

Table 10. Validity test of SUS

Item	The calculated r value	The tabled r value	Description
SUS1	0.475	0.361	Valid
SUS2	0.822	0.361	Valid
SUS3	0.423	0.361	Valid
SUS4	0.687	0.361	Valid
SUS5	0.387	0.361	Valid
SUS6	0.782	0.361	Valid
SUS7	0.433	0.361	Valid
SUS8	0.785	0.361	Valid

Item	The calculated r value	The tabled r value	Description
SUS9	0.406	0.361	Valid
SUS10	0.671	0.361	Valid

Table 11 shows that all items on the SUS are deemed valid because the computed r-value is greater than the critical r-value.

a. Reliability Test

Table 11. Reliability Test of 26 UEQ Items

Reliability Statistics	
Cronbach's Alpha	N of Items
0.993	26

Table 12 shows that all indicator items in the UEQ are deemed reliable because the Cronbach's alpha values are greater than 0.60.

Table 12. Reliability Test of the 6 UEQ Scales

Scale	Cronbach's Alpha
Attractiveness	0.90
Perspicuity	0.90
Efficiency	0.87
Dependability	0.80
Stimulation	0.91
Novelty	0.83

Table 13 displays that all scales in the UEQ are considered reliable as the Cronbach's alpha values are greater than 0.60.

Table 13. Reliability Test of SUS

Reliability Statistics	
Cronbach's Alpha	N of Items
0.795	10

Table 14 shows that all items in the SUS questionnaire are considered reliable, as the Cronbach's alpha values are greater than 0.60.

C. Analysis of Demographic Data

Respondents' characteristics can be grouped based on gender, age, residence, highest education level, duration of app usage, and intensity of app usage to provide an overview of the respondents' conditions. The following are the results of the demographic analysis of the respondents:

a. Gender

Table 14. Characteristics Based on Gender

Gender	Total	Percentage
Male	52	35.1%
Female	196	64.9%

According to Table 15, there are 52 male respondents, accounting for 35.1% of the total, and 96 female respondents, accounting for 64.9%. Therefore, it can be concluded that the majority of OVO users in this study are female.

b. Age

Table 15. Characteristics Based on Age

Age	Total	Percentage
15 – 23 years	112	75.7%
24 – 32 years	14	9.5%
33 – 41 years	10	6.8%
42 – 50 years	10	6.8%
> 50 years	2	1.4%

According to Table 16, it can be seen that there are 112 respondents aged 15-23 years old, accounting for 75.7%, 14 respondents aged 24-32 years old, accounting for 9.5%, 10 respondents aged 33-41 years old, accounting for 6.8%, 10 respondents aged 42-50 years old, accounting for 6.8%, and 2 respondents aged over 50 years old, accounting for 1.4%. Therefore, it can be concluded that the majority of OVO users in this study are aged between 15 and 23 years old.

c. Residence

Table 16. Characteristics Based on Residence

Residence	Total	Percentage
Banten	3	2%
Bengkulu	1	0.7%
DKI Jakarta	37	25%
West Java	25	16.9%
Central Java	1	0.7%
East Java	4	2.7%
Bangka Belitung	6	4.1%
Riau	1	0.7%
Lampung	1	0.7%
South Sulawesi	1	0.7%
South Sumatra	66	44.6%
North Sumatra	2	1.4%

According to Table 17, it can be seen that there are respondents from various provinces in Indonesia. There are three respondents (2%) from Banten Province, 1 respondent (0.7%) from Bengkulu Province, 37 respondents (25%) from DKI Jakarta Province, 25 respondents (16.9%) from West Java Province, 1 respondent (0.7%) from Central Java Province, four respondents (2.7%) from East Java Province, six respondents (4.1%) from Bangka Belitung Islands Province, 1 respondent (0.7%) from Riau Islands Province, 1 respondent (0.7%) from Lampung Province, one respondent (0.7%) from South Sulawesi Province, 66 respondents (44.6%) from South Sumatra Province, and two respondents (1.4%) from North Sumatra Province.

From the data, most OVO users involved in this study are from South Sumatra Province.

d. Highest education level

Table 17. Characteristics based on highest education level

Highest education level	Total	Percentage
Elementary School	1	0.7%
Junior High School	5	3.4%
Senior High School	97	65.5%
Diploma	2	1.4%
Bachelor's Degree	40	27%

Master's Degree	1	0.7%
Other	2	1.4%

According to Table 18, it can be seen that there is one respondent with an elementary school education, accounting for 0.7%, five respondents with a junior high school education, accounting for 3.4%, 97 respondents with a senior high school education, accounting for 65.5%, two respondents with a diploma (D3) education, accounting for 1.4%, 40 respondents with a bachelor's degree (S1) education, accounting for 27%, one respondent with a master's degree (S2) education, accounting for 0.7%, and two respondents with other last education, accounting for 1.4%. Therefore, most OVO users in this study have a high school education.

e. Usage Duration

Table 18. Characteristics based on usage duration

Usage duration	Total	Percentage
< 1 year	33	22.3%
1 – 3 years	57	38.5%
> 3 years	58	39.2%

Based on Table 19, it can be seen that 33 respondents have been using the OVO application for less than one year, accounting for 22.3%, 57 respondents who have been using the OVO application for 1 to 3 years, accounting for 38.5%, and 58 respondents who have been using the OVO application for more than three years, accounting for 39.2%. Therefore, most OVO users in this study have used the OVO application for over three years.

f. Usage Intensities

Table 19. Characteristics based on usage intensities

Usage intensities	Total	Percentage
Rarely	29	19.6%
Sometimes	52	35.1%
Frequently	60	40.5%
Very frequently	7	4.7%

According to Table 20, it can be seen that 29 respondents rarely use the OVO application, accounting for 19.6% of the total, 52 respondents sometimes use the OVO application, accounting for 35.1%, 60 respondents who frequently use the OVO application, accounting for 40.5%, and seven respondents who use the OVO application very frequently, accounting for 4.7%. Most OVO users in this study frequently use the OVO application.

D. Descriptive Statistical Analysis

Descriptive statistical analysis of the User Experience Questionnaire (UEQ) method is conducted by calculating the mean scores for each UEQ scale and each question item. However, data transformation needs to be performed before conducting the descriptive statistical analysis. The following table and graph show the mean scores for pragmatic and hedonic quality:

Table 20. Mean Score of Pragmatic and Hedonic Quality

Pragmatic and Hedonic Quality	
Attractiveness	1.56
Pragmatic Quality	1.52
Hedonic Quality	0.90

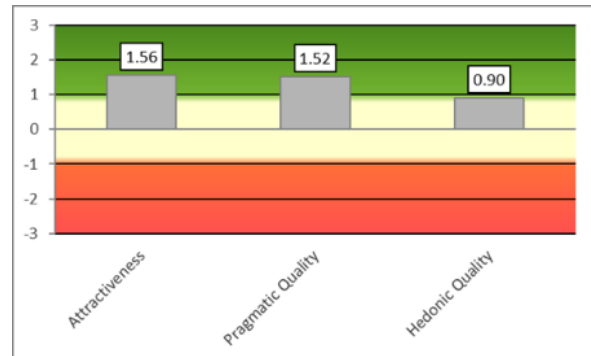


Figure 2. Graph of Mean Scores for Pragmatic and Hedonic Quality

Based on the data presented in Table 16 and Figure 2, it can be observed that attractiveness, pragmatic quality, and hedonic quality of the OVO application are in the green area, indicating positive evaluation scores. The following table and graph show the mean scores for the 6 UEQ scales:

Table 21. Mean Scores of the 6 UEQ Scales

UEQ Scales	
Attractiveness	1.563
Perspicuity	1.671
Efficiency	1.546
Dependability	1.331
Stimulation	1.162
Novelty	0.644

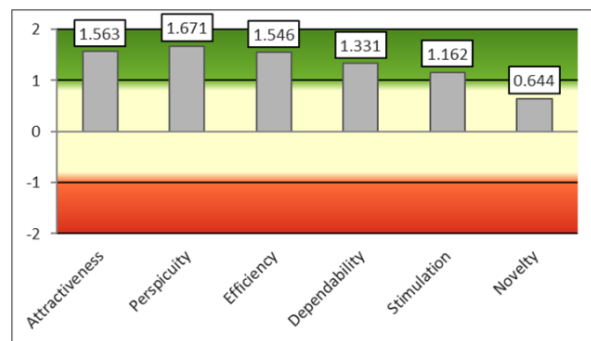


Figure 3. Graph of Mean Scores for UEQ Scales

Based on the data presented in Table 17 and Figure 3, it can be observed that the attractiveness scale, perspicuity scale, efficiency scale, dependability scale, and stimulation scale of the OVO application are in the green area, indicating positive evaluation scores. On the other hand, the novelty scale is in the yellow area, indicating a neutral evaluation score.

Table 22. The mean scores for each UEQ item

Item	Mean	Left	Right
ATT1	1.5	menyusahkan	menyenangkan
PER1	1.8	tak dapat dipahami	dapat dipahami
NOV1	1.0	kratif	monoton
PER2	1.6	mudah dipelajari	sulit dipelajari

Item	Mean	Left	Right
STI1	1.5	bermanfaat	kurang bermanfaat
STI2	0.7	membosankan	mengasyikkan
STI3	1.2	tidak menarik	menarik
DEP1	0.9	tak dapat diprediksi	dapat diprediksi
EFF1	1.4	cepat	lambat
NOV2	0.3	berdaya cipta	konvensional
DEP2	1.6	menghalangi	mendukung
ATT2	1.8	baik	buruk
PER3	1.5	rumit	sederhana
ATT3	1.4	tidak disukai	menggemirakan
NOV3	0.7	lazim	terdepan
ATT4	1.6	tidak nyaman	nyaman
DEP3	1.5	aman	tidak aman
STI4	1.2	memotivasi	tidak memotivasi
DEP4	1.3	memenuhi	tidak memenuhi
EFF2	1.5	ekspektasi	ekspektasi
EFF2	1.5	tidak efisien	efisien
PER4	1.8	jelas	mbingungkan
EFF3	1.8	tidak praktis	praktis
EFF4	1.5	terorganisasi	berantakan
ATT5	1.4	atraktif	tidak atraktif
ATT6	1.8	ramah pengguna	tidak ramah pengguna
NOV4	0.7	konservatif	inovatif

Based on Table 23, it can be observed that all UEQ items received positive evaluations except for item STI2 (boring/engaging), item NOV2 (conventional/innovative), item NOV3 (ordinary/leading), and item NOV4 (conservative/innovative) which received neutral evaluations..

Table 23. Benchmark Results

Scale	Mean	Comparisson to benchmark
Attractiveness	1.56	Above Average
Perspiciuity	1.67	Above Average
Efficiency	1.55	Good
Dependability	1.33	Above Average
Stimulation	1.16	Above Average
Novelty	0.64	Below Average

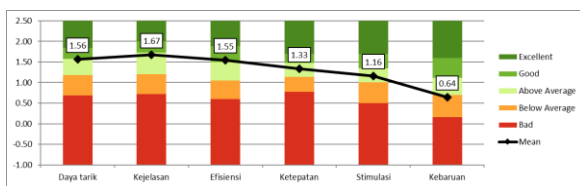


Figure 4. Benchmark Results Graph

Based on Table 24 and Figure 4, the benchmark results indicate that the efficiency scale is rated "Good". The attractiveness, perspicuity, dependability, and stimulation scales are rated as "Above Average". However, the novelty aspect is still rated as "Below Average".

Descriptive statistical analysis using the System Usability Scale (SUS) method in this study involved calculating the average or mean SUS scores. However, before conducting the descriptive statistical analysis, data transformation is necessary using the rules of the SUS method. After the data transformation, the average or mean SUS scores can be assessed. From the final

scores, it can be determined whether the system is rated as good or not. The following are the results of calculating the average or mean SUS scores using the rules of the SUS method:

Table 24. Summary of SUS Score Calculation Results

R	Calculated Score		R	Calculated Score	
	Total	Score		Total	Skor
1	29	72.5	75	38	95
2	33	82.5	76	20	50
3	40	100	77	40	100
4	40	100	78	22	55
5	30	75	79	32	80
6	30	75	80	28	70
7	26	65	81	37	92.5
8	29	72.5	82	37	92.5
9	29	72.5	83	30	75
10	28	70	84	36	90
11	30	75	85	34	85
12	33	82.5	86	20	50
13	35	87.5	87	37	92.5
14	34	85	88	23	57.5
15	28	70	89	28	70
16	36	90	90	34	85
17	34	85	91	29	72.5
18	34	85	92	24	60
19	28	70	93	40	100
20	39	97.5	94	35	87.5
21	40	100	95	35	87.5
22	40	100	96	35	87.5
23	38	95	97	36	90
24	34	85	98	33	82.5
25	32	80	99	40	100
26	18	45	100	26	65
27	40	100	101	25	62.5
28	26	65	102	30	75
29	25	62.5	103	33	82.5
30	28	70	104	30	75
31	31	77.5	105	19	47.5
32	29	72.5	106	32	80
33	23	57.5	107	28	70
34	36	90	108	36	90
35	24	60	109	24	60
36	39	97.5	110	29	72.5
37	34	85	111	21	52.5
38	26	65	112	35	87.5
39	26	65	113	36	90
40	33	82.5	114	26	65
41	36	90	115	37	92.5
42	29	72.5	116	40	100
43	26	65	117	28	70
44	30	75	118	40	100
45	32	80	119	32	80
46	35	87.5	120	25	62.5
47	34	85	121	40	100
48	35	87.5	122	37	92.5
49	29	72.5	123	32	80
50	33	82.5	124	37	92.5
51	35	87.5	125	35	87.5
52	31	77.5	126	31	77.5
53	36	90	127	25	62.5
54	38	95	128	20	50
55	40	100	129	18	45
56	29	72.5	130	31	77.5
57	34	85	131	20	50
58	25	62.5	132	30	75
59	36	90	133	31	77.5
60	24	60	134	20	50
61	26	65	135	16	40
62	27	67.5	136	20	50

R	Calculated Score		R	Calculated Score	
	Total	Score		Total	Skor
63	26	65	137	36	90
64	33	82.5	138	35	87.5
65	34	85	139	28	70
66	33	82.5	140	20	50
67	34	85	141	39	97.5
68	38	95	142	33	82.5
69	26	65	143	34	85
70	28	70	144	34	85
71	30	75	145	29	72.5
72	40	100	146	33	82.5
73	25	62.5	147	26	65
74	29	72.5	148	22	55
<b>Average SUS score</b>					
<b>77.53</b>					

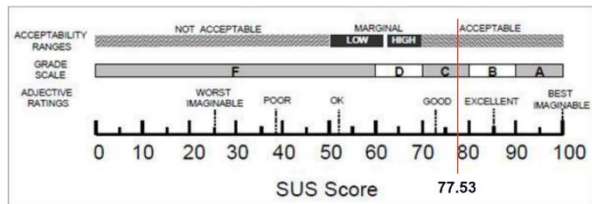


Figure 5. SUS Score Value [20]

Table 25 and Figure 5 summarize SUS score calculations from the questionnaires distributed to 148 respondents, resulting in an average or mean score of 77.53 according to the System Usability Scale (SUS) method.

After obtaining the SUS score, the next step is interpreting the results. There are three perspectives to determine the interpretation of the SUS score calculations:

a. Acceptability

Acceptability ranges consist of three levels: not acceptable, marginal (low and high), and acceptable. Acceptability is used to assess the level of user acceptance of the application.

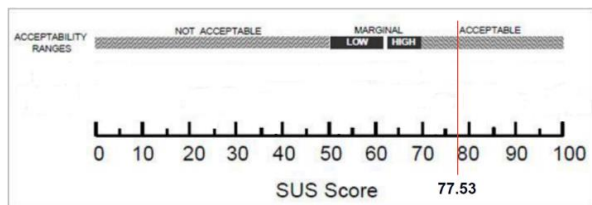


Figure 6. Acceptability Ranges

In the calculation of the SUS score, the previously obtained score was 77.53, indicating that the user acceptance level of the OVO application is categorized as "ACCEPTABLE".

b. Grade

The grade scale consists of A, B, C, D, and F, which are used to determine the grade level of the application.

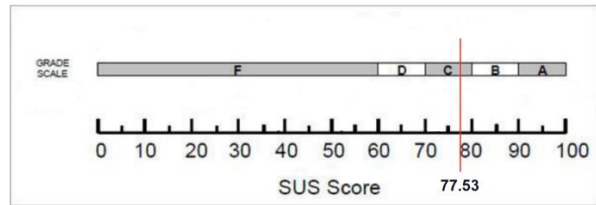


Figure 7. Grade Scales

In the calculation of the SUS score, the previously obtained score was 77.53, indicating that the OVO application falls under the "C" grade.

c. Adjective

Adjective ratings consist of the categories worst imaginable, poor, ok, good, and best imaginable. Adjective ratings are used to determine the rating of the application.

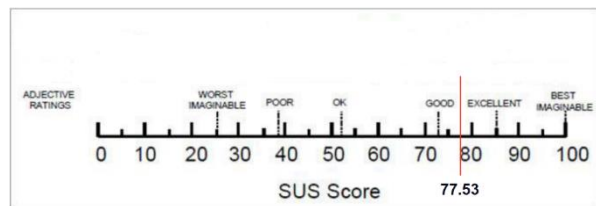


Figure 8. Adjective Ratings

In the calculation of the SUS score, the previously obtained score was 77.53, indicating that the OVO application falls under the "GOOD" category.

E. Improvement Recommendations

Based on the evaluation of the user experience conducted using the User Experience Questionnaire (UEQ) method and processed with UEQ Data Analysis Tool Version 12, the following recommendations can be made for enhancing the OVO application:

- a. Consider incorporating more innovative, cutting-edge, and creative services or features into the OVO application. This could involve adopting new and innovative features that align with current trends in the industry. These additions will help improve novelty, ensuring the application stays up-to-date and provides a unique user experience.
- b. Explore the inclusion of more engaging services or features within the OVO application. For instance, consider incorporating gamification elements that allow users to earn OVO Points or integrating captivating animations and enjoyable sound effects. Such enhancements will enhance the stimulation aspect of the application, making the overall user experience more enjoyable and interactive.

By implementing these recommendations, it is anticipated that the OVO application can address the identified issues and provide a more satisfactory user experience.



#### 4. Conclusion

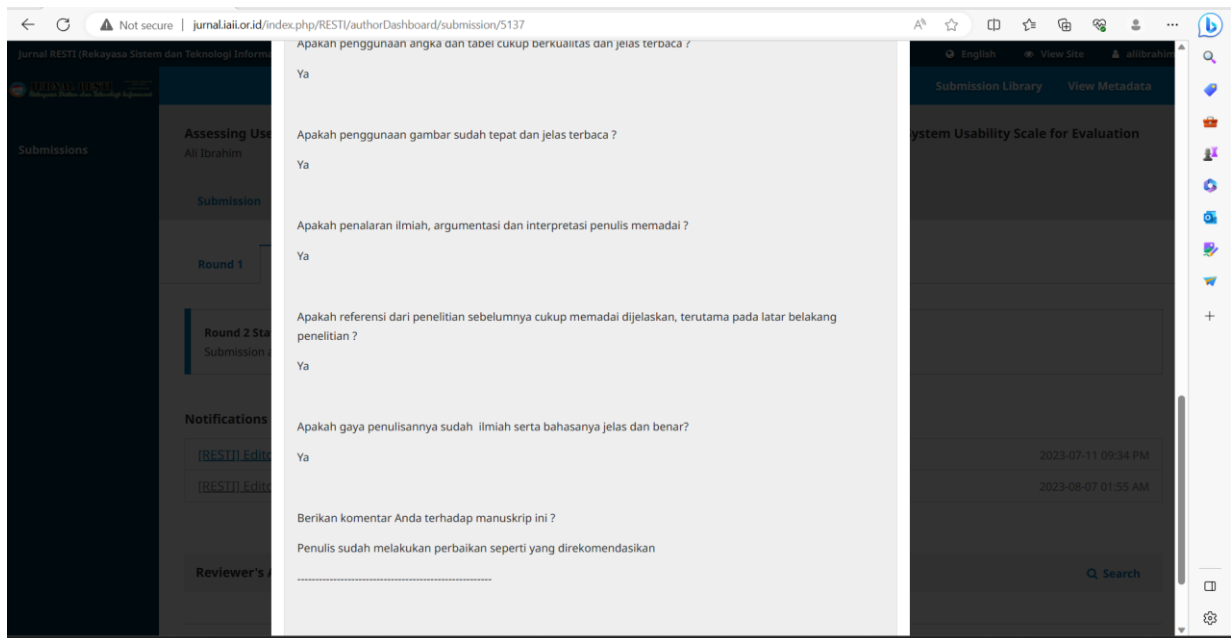
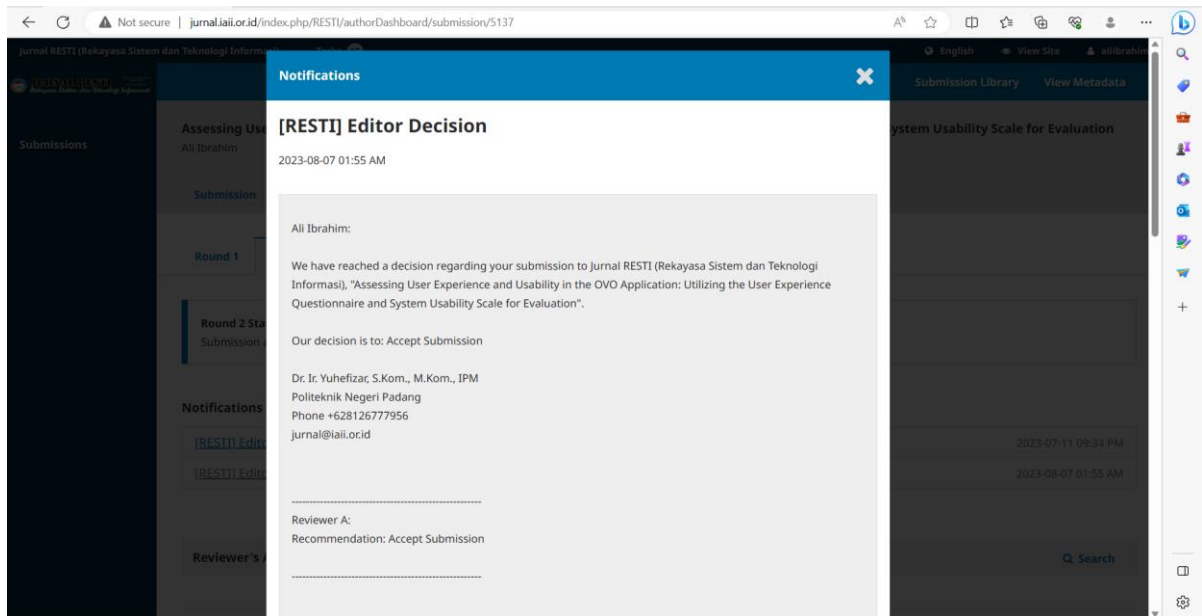
The user experience and usability evaluation using the User Experience Questionnaire (UEQ) and System Usability Scale (SUS) has been successfully conducted, involving 148 competent respondents who assessed the application based on gender, age, duration of usage, and frequency of usage. The benchmark results for the six aspects of UEQ show that one aspect, efficiency, falls into the "good" category with a mean value of 1.55. Additionally, four aspects, namely attractiveness (mean: 1.56), perspicuity (mean: 1.67), dependability (mean: 1.33), and stimulation (mean: 1.16), are classified as "above average" categories. However, one aspect, novelty, falls into the "below average" category with a mean value of 0.64. Regarding the measurement of OVO application usability using the System Usability Scale (SUS) method, the obtained score is 77.53. This score falls within the "Acceptable" range in the Acceptability Ranges category, a "C" grade in the Grade Scale category, and is rated as "Good" in the Adjective Ratings category.

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All Ibrahim  
Universitas Sriwijaya

Onky Alexander  
Universitas Sriwijaya


Ken Ditha Tania  
Universitas Sriwijaya

Pacu Putra  
Universitas Sriwijaya

Allsela Meiriza  
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