# Easily Determining Post-Study System Usability for Anime Community E-Commerce Analysis

Rio Andika Malik[1*], Sri Mona Octafia[2], Vicky Setia Gunawan[3]

*Abstract*—**The rapid growth of e-commerce as a form of electronic commerce has transformed the global shopping landscape. To maintain user satisfaction and competitiveness, e-commerce sites must effectively understand and improve the usability of their systems after launch. The aims of the study are to improve e-commerce post-launch usability so that anime fans' enthusiasm can be capitalized upon for financial gain and market expansion. In this study, we adopted a combined approach that included user observations, interviews, surveys, and performance measurement for anime community e-commerce analysis Weeboo web commerce. Through this method, we analyze the behavior and views of users towards e-commerce systems. The results show that most users experience a positive experience in shopping online by appreciating the usability of the layout, search process, and fast checkout process. The results indicated that most users have a positive online shopping experience, appreciating the layout, search process, and fast checkout process. The SUS score of 75.375 (grade B) and the overall PSSUQ satisfaction score of 2.0296 indicate that the system is acceptably well-received. The proposed recommendations can help e-commerce companies quickly identify usability issues and implement relevant fixes.**

*Index Terms*—**E-commerce, PSSUQ, SUS, system usability, UI/UX.**

## I. Introduction

The rapid development of information and communication technology in recent years has drastically changed the way people shop [1], [2]. This digital transformation has fundamentally reshaped consumer behavior and expectations, making usability a cornerstone of success in online shopping experiences. E-commerce, as a form of electronic commerce, has become one of the sectors most affected by this digital transformation [3]–[5]. Easy accessibility, wide selection of products, and the convenience of online shopping have driven the rapid growth of e-commerce worldwide. In this context, it is important for e-commerce platforms to ensure that their systems have a high level of usability so that the online shopping experience becomes more convenient, efficient and satisfying for users [6], [7].

The phenomenon of globalization and advances in information technology have also had a significant impact on various aspects of human life, including popular culture and the entertainment industry. Globalization and technological advancements have not only reshaped commerce but also deeply influenced popular culture, with Japanese anime standing out as a prominent example [8]–[10]. The global appeal of anime has sparked creativity across various mediums, including visual arts, literature, and fashion, creating new avenues for e-commerce innovation [11], [12]. Amidst the exponential global interest in anime, significant opportunities are emerging in the e-commerce space [10], [12], [13].

Usability is a fundamental concept in interactive system design and evaluation, plays a pivotal role in facilitating seamless user interactions and fulfilling their needs efficiently [14]–[16]. A good level of usability ensures that users can easily interact with the system, obtain the data they require, execute their assignments quickly significant hindrance. However, in the dynamic landscape of e-commerce, maintaining optimal usability presents ongoing challenges amidst evolving user preferences and market dynamics [6], [7], [15]. While numerous studies have focused on pre-launch usability assessments, the importance of post-launch evaluations is increasingly recognized in ensuring sustained competitiveness and customer satisfaction in e-commerce [17], [18]. Meanwhile, understanding post-study usability is becoming increasingly important in a rapidly changing environment. In a competitive e-commerce environment, the ability to quickly understand post-launch system usability has a major impact on competitiveness, customer satisfaction, and ultimately business success [19], [20].

Therefore, this study aims to fill this knowledge gap by focusing on quick understanding of post-launch system usability in an e-commerce context. Using proven usability assessment methods, such as user observations, interviews, surveys and performance measurement, this research will try to Evaluate the usability of the e-commerce system that has been launched, Shame on the potential usability issues that may arise after launch, provide quick fix recommendations to address identified usability issues [21], [22] As such, it is hoped that this research will make a valuable contribution in understanding and improving post-launch e-commerce system usability, as well as assisting e-commerce companies in taking

*Corresponding author
[1]Rio Andika Malik, Digital of Business, Universitas Perintis Indonesia (e-mail: rioandikamalik@upertis.ac.id).
[2]Sri Mona Octafia, Digital of Business, Universitas Perintis Indonesia (e-mail: srimonaoctafia@upertis.ac.id).
[3]Vicky Seria Gunawan, Digital of Business, Universitas Perintis Indonesia (e-mail: vicky.setia.gunawan@upertis.ac.id).

prompt and appropriate actions to maintain a good online shopping experience for their customers.

In an era characterized by rapid digital evolution, the convergence of popular culture like anime with e-commerce not only fosters deeper fan engagement but also unlocks substantial economic opportunities. This study endeavors to contribute to enhancing post-launch e-commerce usability, empowering businesses to adapt swiftly to evolving consumer needs and preferences, thereby fostering enduring customer satisfaction and loyalty.

Usability, a fundamental concept in interactive system design and evaluation, ensures seamless user interactions and efficient fulfillment of needs. High usability allows users to interact easily with the system, quickly obtain data, and execute tasks with minimal hindrance. Maintaining optimal usability in e-commerce is challenging due to evolving user preferences and market dynamics. While many studies focus on pre-launch usability assessments, post-launch evaluations are increasingly recognized for sustained competitiveness and customer satisfaction.

This study aims to fill the knowledge gap by focusing on understanding post-launch system usability in e-commerce. The findings will help e-commerce companies maintain a high-quality post-launch shopping experience, ultimately leading to improved brand loyalty and profitability. Previous studies have not adequately addressed this post-launch aspect, making this research a significant contribution to the field.

## II. Related Work

In 1986, John Brooke created the SUS, a usability scale that is dependable, well-liked, efficient, and reasonably priced. SUS has 10 questions with 5 possible answers. Strongly disagree to strongly agree are the range of responses, and the total has a 100 highest possible result and a 0 least value [6], [23]. Several rules are applied to the data collected from respondents to determine the SUS score. Formula for computation and SUS typical customer conversion scale are presented in (1) and (2) [6].

$$SUS = 2.5 \times \left[ \sum_{n=1}^{5} (U_{2n-1} - 1) + (5 - U_{2n}) \right] \quad (1)$$

where $U_{2n-1}$ represents the scores of the odd-numbered questions and $U_{2n}$ represents the scores of the even-numbered questions on the SUS questionnaire.

One point will be subtracted from the respondent's score for each of the odd-numbered questions (1, 3, 5, 7, and 9). Each question contains an even number (2, 4, 6, 8, 10), and the total result is calculated by subtracting the question score from the respondents' responses from a score of 5. The SUS score is calculated by adding the scores for each question and multiplying the result by 2.5. The scoring guidelines are applicable to 1 responder. Equation (2) is used to further calculate the SUS score of each respondent by determining their average score ($\bar{x}$) by adding together all of their scores ($\sum x$) then dividing by the total size of respondents ($n$) [23].

$$\bar{x} = \frac{\sum x}{n} \quad (2)$$

The system usability scale (SUS) intake procedure is concluded by calculating the average SUS score for all applicants. The outcome is subsequently SUS-adjusted shortly after that. which group the test results that have already yielded an average score belong to. Any SUS score exceeding 68 will be considered above average, while any score below 68 will be considered below average, since the average SUS score across all studies is 68 [23]. If the result falls smaller than 68, anything has gone amiss with the usability and requires to be criticized.
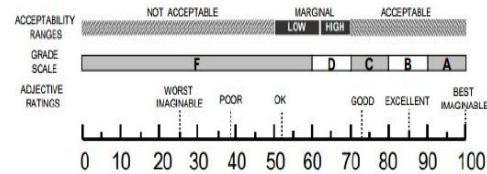


Fig. 2. SUS Score [6], [23]

Table 1 illustrates Fig. 2 of the SUS user experience evaluation scale, which is classified as low, medium, and high perceived usability.

Table 1.
Scale Metric Bend Classification SUS [6], [23]

| Limit of SUS Index | Level |
|---|---|
| 84.1 – 100 | A+ |
| 80.8 – 84.0 | A |
| 78.9 – 80.7 | A- |
| 77.2 – 78.8 | B+ |
| 74.1 – 77.2 | B |
| 72.6 – 74.0 | B- |
| 71.1 – 72.5 | C+ |
| 65.0 – 71.0 | C |
| 62.7 – 64.9 | C- |
| 51.7 – 62.6 | D |
| 0.0 – 51.6 | F |

Examining refers to the method of assessing a product's performance and usefulness as well as the simplicity with which its user interface allows it to be investigated for customer satisfaction and usability in order to spot potential issues with the product [6], [7]. An evaluation may be performed to some extent to determine the level of customer appeal. By assessing the user experience, the software designer can gain a high-level understanding of the user's behavior when dealing with the device's interface and a sense of the device's marketability. To conduct scenario-driven usability testing, PSSUQ was specifically created.

The Likert-scaled metrics are offered in the IBM PSSUQ (Post-study System Usability Questionnaire) package. All 16 questions are then separated into four categories: information quality (INFOQUAL), system usability (SYSUSE), interface quality (INTERQUAL), and overall satisfaction score (OVERALL) [7] as shown as Table 2.

Table 2.
Guidelines for PSSUQ Disclosures [6], [7]

| No | PSSUQ Disclosures |
|---|---|
| 1 | I really like with this system's general ease of use. |

| | |
|---|---|
| 2 | This way of working was easy to use. |
| 3 | Through this process, I was able to finish all the tasks and simulations quickly. |
| 4 | I had no issues adopting this system. |
| 5 | This system was simple to learn how to take advantage of. |
| 6 | Considering this setup, I think I could get consumed with soon. |
| 7 | Error messages from the system made it very evident to me how to resolve issues. |
| 8 | Once I erred while using the technique, I was able to get back up swiftly and effortlessly. |
| 9 | This system came with clear documentation, on-screen messages, and online support, among additional features. |
| 10 | Finding the information, I desired was simple. |
| 11 | The completion of the exercises and scenarios was aided by the information. |
| 12 | The information on the platform's panels was clearly organized. |
| 13 | This system had a great user interface. |
| 14 | I particularly enjoy using this system's interface. |
| 15 | This system fulfills all my expectations in terms of features and functionality. |
| 16 | Overall, I am impressed by this system all around. |

The 16 PSSUQ statements in Table 2 were divided into four categories: system usability (SYSUSE) for statement items 1–6, information quality (INFOQUAL) for statement items 7-12, interface quality (INTERQUAL) for statement items 13–15 and total fulfillment score (OVERALL) for statement items 1–16. A seven-point answer scale is used in questionnaires; lower scores denote higher achievement. This is unusual because the majority of other surveys utilise large numbers to denote a higher score. A more thorough analysis of the various elements influencing the website, software, system, or product is given by the sub-scales.

## III. RESEARCH METHOD

This research will focus on usability testing using Cognitive Walkthrough [24], distributing SUS and PSSUQ, questionnaires, and interviews. This research method will be carried out through a combination approach between user observation, interviews, surveys, and performance measurement. The first, make direct observations of users when interacting with the e-commerce system that has been launched. The data obtained from this observation will provide insight into user behavior, difficulties encountered [25], and aspects of usability that need further evaluation. Then Conduct in-depth interviews with a number of users who have used e-commerce systems [22], [23]. as shows as Fig. 1.
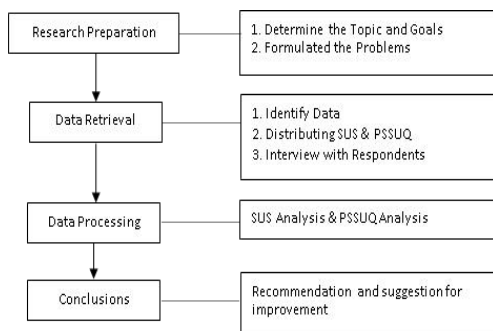


Fig 1. Research Method

Figure 1 explain the process begins with direct observations of users interacting with the e-commerce system. This step aims to gather insights into user behavior, identify difficulties encountered, and highlight aspects of the system that require further evaluation. Following the observations, in-depth interviews are conducted with selected users. These interviews focus on understanding users' experiences, problems encountered, and their suggestions and expectations regarding system usability.

To gain a broader perspective, surveys are distributed to a larger user base. The survey questions cover various aspects such as ease of use, navigation, product search, payment processing, and overall satisfaction with the online shopping experience. Quantitative data is collected through performance measurement, which involves tracking specific metrics related to user interaction with the system. This data helps in identifying patterns and quantifying the usability issues.

Interviews will focus on users' understanding of their experiences, problems encountered, and their suggestions and expectations regarding system usability and distribute surveys to a wider range of users to get a more comprehensive view of system usability [28]. The survey will cover questions related to ease of use, navigation, product search, payment processing, and general satisfaction with the online shopping experience [29]–[31].

The next stage is the data obtained from observations, interviews, surveys, and performance measurements will be analyzed qualitatively and quantitatively [26], [32] The information gathered will be used to identify patterns of usability problems, identify potential improvements, and formulate appropriate recommendations [27], [33], [34] Based on the results of the analysis, specific and practical recommendations for improvement will be developed to increase the usability of the e-commerce system using SUS and PSSUQ [15], [18], [35], [36]. These recommendations are aimed at enhancing user experience and ensuring a seamless online shopping journey. By following this structured methodology, the study aims to provide a comprehensive view of the post-launch usability of e-commerce systems and offer actionable insights for improving user satisfaction and system performance.

## IV. RESULT AND DISCUSSION

The process of conducting this research involved several key steps, each contributing to the comprehensive evaluation and enhancement of the Weeboo e-commerce platform's post-launch usability. The methodology incorporated both qualitative and quantitative approaches to provide a holistic understanding of user experiences and system performance.

Following the use of the previously mentioned investigative methods, the analysis and findings from the study are summarized as follows. The System Usability Dictionary 19 respondents are asked to score the next 10 questions using a

SUS, selecting from a range of five responses that include Strongly agree to disagree.

Table 3.
System Usability Scale Disclosures [6]

| No | SUS Disclosures |
|---|---|
| 1. | I think that I want to use the weeboo.id webcommerce frequently. |
| 2. | I found the weeboo.id webcommerce nnecessarily complex. |
| 3. | I thought the weeboo.id webcommerce was easy to use. |
| 4. | I believe that I would need the support of a technical person to be able to use this weeboo.id webcommerce. |
| 5. | I found the various functions in this weeboo.id webcommerce were well integrated. |
| 6. | I thought there was too much inconsistency in this weeboo.id webcommerce. |
| 7. | I imagine most people would learn to use weeboo.id webcommerce very quickly. |
| 8. | I found the weeboo.id webcommerce very cumbersome to use. |
| 9 | I felt very confident using weeboo.id webcommerce. |
| 10. | I needed to learn many things before I could get going with this weeboo.id webcommerce. |

The established score, which is calculated using the formula (questionnaire one - 1) + (5 - questionnaire two), displays the findings of the SUS equation. The average score for the endpoint is obtained by fragmenting the formula (sum of computed score × 2.5) by 52, indicating the total number of those polled. The ultimate SUS score is 75.375, as can be seen in Table 4.

Table 4.
System Usability Scale Questionnaire

| Respondent | SUS | | | | | | | | | | Total | SUS SCORE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $Q_1$ | $Q_2$ | $Q_3$ | $Q_4$ | $Q_5$ | $Q_6$ | $Q_7$ | $Q_8$ | $Q_9$ | $Q_{10}$ | | |
| R1 | 4 | 3 | 4 | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 35 | 87,50 |
| R2 | 4 | 3 | 4 | 2 | 4 | 2 | 4 | 2 | 2 | 2 | 29 | 72,50 |
| R3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 28 | 70,00 |
| R4 | 4 | 2 | 4 | 2 | 4 | 3 | 4 | 2 | 4 | 3 | 32 | 80,00 |
| R5 | 3 | 2 | 3 | 4 | 3 | 3 | 3 | 4 | 3 | 3 | 31 | 77,50 |
| R6 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 4 | 3 | 34 | 85,00 |
| R7 | 3 | 3 | 3 | 5 | 3 | 3 | 4 | 3 | 2 | 3 | 32 | 80,00 |
| R8 | 4 | 3 | 4 | 3 | 4 | 2 | 4 | 3 | 2 | 3 | 32 | 80,00 |
| R9 | 3 | 3 | 3 | 3 | 4 | 2 | 4 | 3 | 3 | 4 | 32 | 80,00 |
| R10 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 23 | 57,50 |
| R11 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 29 | 72,50 |
| R12 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 29 | 72,50 |
| R13 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 4 | 36 | 90,00 |
| R14 | 3 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 3 | 3 | 33 | 82,50 |
| R15 | 3 | 3 | 5 | 3 | 3 | 5 | 3 | 4 | 4 | 3 | 36 | 90,00 |
| R16 | 4 | 5 | 4 | 4 | 3 | 4 | 3 | 2 | 5 | 4 | 38 | 95,00 |
| R17 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | 3 | 3 | 3 | 32 | 80,00 |
| R18 | 4 | 3 | 4 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 35 | 87,50 |
| R19 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 4 | 3 | 2 | 27 | 67,50 |
| SUS Score | | | | | | | | | | | | **75,375** |

The analysis revealed in Table 4 that users generally had a positive experience with the Weeboo platform, particularly appreciating the intuitive layout and fast checkout process. However, areas for improvement were identified, such as enhancing search functionality and streamlining navigation pathways. The evaluation of the SUS for the Weeboo.id user experience is shown in figure 3 with SUS score is 75.375. It describes in detail how respondents can be promoted if SUS get a grade of B and is in the acceptable/good category.
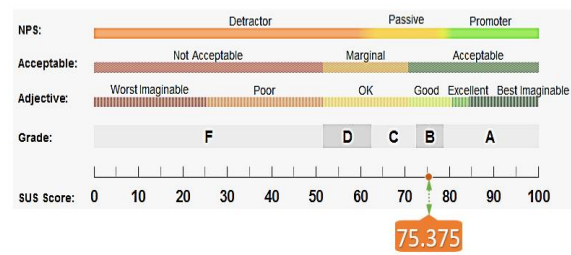

Fig 3. SUS Score of weeboo.id

Most user experience techniques place a strong emphasis on user research during this stage to get input from the validation process. The user experience improvements were computed leveraging the PSSUQ (Post Study System Usability Questionnaire) poll project, which may be used to test usability. The PSSUQ is used to assess the user's satisfaction with the user interface. The PSSUQ is a set of questionnaires designed to research usability factors (the best way to interact with customers and user experience)[7]. Customers may be able to acquire appropriate records as a better solution thanks to the duration of such interactions. In the table below, the PSSUQ Subscale Summary Result is displayed:

Table 5.
PSSUQ Rating

| Final PSSUQ Class | Balanced Signify | Word Understanding |
|---|---|---|
| SYSUSE | 2,012 | Proudly Accepted |
| INFOQUAL | 2,193 | Proudly Accepted |
| INTERQUAL | 1,884 | Proudly Accepted |
| Summary | 2,0296 | Proudly Accepted |

By evaluating the accuracy of the information, the usability of the interface, and user happiness. Some aspects of the weeboo.id webcommerce application, like its clarity and usability, are pleasing to users. The 19 respondents' perception of the overall PSSUQ satisfaction was 2.0296, which is very satisfactory. Weeboo.id's webcommerce usability was evaluated using the PSSUQ. Table 5 provides a summary of the system usability evaluation. The results of this study include an in-depth understanding of the usability of post-launch e-commerce systems, especially e-commerce for the Japanese anime lover community weebo.id, identification of problems that may arise, and recommendations for improvements that can be implemented.

The comprehensive approach to data collection, processing, and analysis ensured that the research provided a detailed and accurate evaluation of the Weeboo platform's post-launch usability. The study's implications highlight the importance of ongoing usability assessments and continuous improvement efforts to maintain high user satisfaction and competitiveness in the e-commerce sector. Following are some of the results achieved from this research:

*1) Understanding Post-Launch System Usability*

Through observations, interviews, and surveys, it was found that most users feel that the e-commerce system has a good level of usability. Users appreciate the intuitive layout, easy product search, and fast checkout process. However, some users have difficulty finding more detailed product information and complain about limitations in search filters.

### 2) Identify Usability Issues

The main problem identified was the lack of clear instructions for use which affected the user experience. Additionally, some users report that navigation on some pages is still confusing, and there is confusion in understanding shipping options and return policies. Some users also experience problems when filling in payment information.

### 3) Improvement Recommendation

Based on the results of the analysis, recommendations for improvement are proposed which include:

    a. Added clearer usage instructions and brief guides on various pages.

    b. Simplification of navigation by reducing the number of clicks required to reach user goals.

    c. Improved search filters and ability to access more detailed product information.

    d. Payment page improvements by reducing the number of steps required and providing clearer explanations.

### 4) Usability Improvement Guide

The results of the research produce detailed guidelines on the actions to be taken by e-commerce companies. This guide includes concrete steps to implement recommendations for improvement. For example, redesigning the interface with a focus on clarity and ease of navigation, and providing visual cues during the checkout process.

### 5) Contributions to E-commerce Usability Research

This research contributes to the understanding of how the usability of e-commerce systems can be improved rapidly after launch. The results and methodology of this study can serve as a reference for future e-commerce usability research, particularly in addressing rapid changes in the digital environment.

Overall, this research highlights the importance of observing and understanding post-launch e-commerce system usability. By identifying problems and providing appropriate recommendations for improvements, e-commerce companies can ensure that the online shopping experience remains satisfactory, accommodates changing user needs, and supports sustainable business growth.

## V. Conclusion

The study successfully identified key post-launch usability issues within the anime community e-commerce platform Weeboo. Through a combination of user observations, interviews, surveys, and performance measurements, the research highlighted positive user experiences, particularly in layout, search process, and checkout speed. The usability scores indicated that the system is generally well-received, but areas for improvement were also identified.

The findings emphasize the importance of continuous usability evaluation even after the launch of e-commerce platforms. Maintaining high usability standards is crucial for ensuring user satisfaction and retaining competitiveness in the fast-paced digital marketplace. The study provides actionable recommendations that can be applied by e-commerce companies to swiftly address usability issues and enhance overall user experience.

This research is limited to the specific context of the Weeboo e-commerce platform and its user base, which primarily consists of anime enthusiasts. The findings and recommendations are tailored to this particular niche and may not be directly applicable to other types of e-commerce platforms or user demographics. Additionally, the study focuses on usability issues post-launch, without delving into pre-launch assessments.

Future research should expand on this study by exploring usability evaluations across different types of e-commerce platforms and broader user demographics. Investigating the long-term impact of implemented usability improvements and their effects on user retention and sales could provide deeper insights. Additionally, integrating advanced technologies such as AI and machine learning to predict and resolve usability issues proactively could be a valuable area of exploration. This research contributes to the general public by offering a framework for continuous usability assessment, ultimately enhancing the quality and efficiency of online shopping experiences. By not merely repeating the research results, this conclusion encapsulates the essence of the findings, their broader implications, and the potential directions for future studies, highlighting the study's contribution to the field and the general public.

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