

## Usability Analysis Of A Package Tracking System Using The System Usability Scale Method

Noordin Asnawi<sup>1\*</sup>, Mei Lenawati<sup>2</sup>, Ridho Pamungkas<sup>3</sup>, Dimas Setiawan<sup>4</sup>

<sup>1,2,3,4</sup> Universitas PGRI Madiun, Indonesia

<sup>1</sup>[noordin\\_asnawi@unipma.ac.id](mailto:noordin_asnawi@unipma.ac.id), <sup>2</sup>[mei.lenawati@unipma.ac.id](mailto:mei.lenawati@unipma.ac.id), <sup>3</sup>[ridho.pamungkas@unipma.ac.id](mailto:ridho.pamungkas@unipma.ac.id),

<sup>4</sup>[dimas.setiawan@unipma.ac.id](mailto:dimas.setiawan@unipma.ac.id)



### \*Corresponding Author

#### Article History:

Submitted: 24-11-2024

Accepted: 30-11-2024

Published: 16-12-2024

#### Keywords:

sistem tracking; usability; system usability scale; User Interface Evaluation; SUS.

#### Brilliance: Research of

Artificial Intelligence is licensed under a Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0).

### ABSTRACT

The Main Branch Post Office (Kantor Pos Cabang Utama, KCU) Madiun, as part of the Pos Indonesia network, plays a key role in managing parcel deliveries, document handling, and financial transactions in Madiun and surrounding areas. The delivery process includes three main stages: First Mail, Middle Mail, and Last Mail. In the First Mail stage, mail and parcels are collected at counters from various sources such as post offices, mailboxes, or customers. In the Middle Mail stage, items are sorted by officers based on their final destinations. Finally, in the Last Mail stage, parcels are sorted again by specific routes or locations within the city before being delivered directly to recipients by couriers. This research focuses on evaluating and improving the user interface of the "Tracking System," a digital tool used to monitor shipments across these stages. To measure its usability and user-friendliness, the System Usability Scale (SUS) method was employed, involving 10 statements for respondents, who were selected from system users. The study's findings reveal that the tracking system is categorized as "OK" in adjective ratings and "Marginal" in terms of acceptability. These results highlight areas for improvement in the system to better support the growing demands of digital postal services while ensuring user satisfaction.

### INTRODUCTION

The Main Branch Post Office (Kantor Pos Cabang Utama, KCU) Madiun, as part of the Pos Indonesia network, plays an important role in managing parcel delivery services, document handling, and financial transactions in the Madiun area and its surroundings. The postal delivery process includes three main stages: First Mail, Middle Mail, and Last Mail. The First Mail stage occurs at the counter, where letters and parcels are collected from various sources, such as post offices, mailboxes, or directly from customers. Once collected, the items proceed to the Middle Mail stage, where postal workers sort all letters and parcels according to their final destinations, either manually or using automated machines at distribution centers. After sorting, parcels addressed outside Madiun are sent to the nearest branch office based on the package's destination, while parcels addressed within the city are forwarded to the delivery section. The final stage, Last Mail or delivery, involves re-sorting parcels from the hub according to specific streets or locations within the city. Afterward, letters and parcels are delivered directly to their destination by couriers or delivery personnel. These three stages ensure that each shipment is processed systematically and efficiently until it reaches the recipient.

A website is a collection of pages displaying information in the form of text, static or moving images, animations, sound, video, or a combination of these elements. These pages can be either static or dynamic and form an interconnected sequence, linked to one another via a network of pages (Andriyan et al., 2020).

Usability is part of the human-computer interaction discipline, focusing on interface design and interactions between humans and computers. It also addresses the user's experience in learning and using specific technologies, applications, or websites (Sukmasetya et al., 2020). Usability originates from the term "usable," which means capable of being used effectively. In general, it can be defined as the process of optimizing interaction between users and systems interactively. Usability impacts the fundamental visitor experience, referring to how easily users can interact with a website, particularly for first-time visitors (Sidik, S.Sn, M.Ds, 2018). A product or service meets usability standards if it fulfills the following criteria (Asnawi, 2018):

- Useful: The extent to which the product/service enables users to achieve their goals and is deemed necessary by users.
- Efficient: The speed with which users can accurately and completely achieve their objectives.
- Effective: How well the product/service behaves according to user expectations and its ease of use in meeting user needs.
- Satisfying: Refers to users' perceptions, feelings, and opinions, typically gathered through written or verbal statements.



- e. Learnable: Related to effectiveness and users' ability to operate the system easily.
- f. Accessible: Refers to the accessibility of the product/service required to achieve a goal.

Usability evaluation methods are defined as procedures consisting of activities to collect data on the use of applications, focusing on end-user interaction to achieve a certain usability level. Usability methods are divided into two categories: empirical methods and inspection methods (Pratama et al., 2021). This study employs the System Usability Scale (SUS) analysis to measure the usability level of the user interface design in the tracking system. Despite being referred to as "quick and dirty," the SUS technique is the most widely used questionnaire for assessing application usability. It was developed by John Brooke in 1986 and consists of 10 items with a 5-point scale for respondents to rate their agreement (Purnamasari et al., 2021). SUS offers several advantages (Firmansyah, 2021):

- a. It does not require complex calculations and is relatively easy to use.
- b. SUS scores range from 0-100, making them easy to interpret.
- c. SUS has proven to be accurate and reliable, even with small sample sizes.
- d. SUS is freely available without any cost.

## LITERATURE REVIEW

### System Usability Scale

The System Usability Scale (SUS) was created in 1996 by John Brooke. SUS is a measurement of user satisfaction level by giving a formal questionnaire to users after using the application. SUS can be used to quickly measure users' views on the usability of the system they use (Achmad, 2019).

System Usability Scale (SUS) is a usability evaluation method that provides adequate results based on considerations of small sample size, time and cost. The results of calculations using the SUS method will be converted into a value, which can be used as a consideration to determine whether an application is suitable or not suitable for implementation. The assessment with SUS is as follows (Ramadhan, 2019):

- a. The scale used is strongly disagree to strongly agree with a value of 1 to 5.
- b. For odd numbered statements, it is calculated as follows: the value of the user response is reduced by 1.
- c. For even numbered statements, it is calculated as follows: the value of 5 is reduced by the value of the user's response.
- d. Add up the response values that have been calculated in points 2 and 3 above, and multiply the result by the value 2.5. The results of this calculation will convert the value range to between 0–100.

### Usability

According to Dalle Juhriansyah et al (2019) Usability has 6 basic principles to fulfill usability, six important principles that support. The target usability is that it is easy to learn (It takes a short time to learn it), easy to remember method use it (users can at least remember how to use a system though haven't used it for a long time), efficient in its use (whether the product or system developed to be able to do the job as intended by the user, ), safe used (the designer must find a way to the user did nothing wrong), it works well (can support the needs and consumer desires) (M.Agil Kusumadya et al., 2022).

## METHOD

The tracking system website is a system designed to scan barcodes on packages. The "Tracking System" provides information about whether a package is ready to be shipped or still requires bagging and receiving first. The home page is shown in Figure 1 below.



Figure 1. Home Page

The website includes several menus that can be used to display information. The features available on the website are listed in Table 1 below.

Table 1. Website features

Feature	Function
<b>Receiving</b>	Displays information about received packages
<b>Bagging</b>	Displays information about the number and weight of packages
<b>Unbagging</b>	Displays a table of tracking numbers
<b>Check Bag Details</b>	Displays detailed package information
<b>Track Bag</b>	Displays information about the number of packages
<b>Track Cannot</b>	Tracks packages in detail

Usability methods are divided into two categories: empirical methods and inspection methods. The empirical method is further divided into two parts: investigative methods (such as interviews, questionnaires, and surveys) and formal usability testing (such as interacting with a website to perform specific tasks).

This study aims to measure the usability level of the user interface design on the tracking system website using the System Usability Scale (SUS). The researcher chose SUS to address the research question regarding usability (whether it is feasible or not). SUS was selected because respondents can quickly and easily complete the questionnaire, which consists of only 10 statements. The survey results provide a single score (0–100), making it relatively easy to interpret (Nioga et al., 2019).

The usability analysis of the interface design on the website uses a quantitative method, a form of research related to data and statistical procedures. Data collection was conducted by distributing questionnaires obtained from SUS using Google Forms.

The usability measurement involves several steps, as illustrated in Figure 2 below.

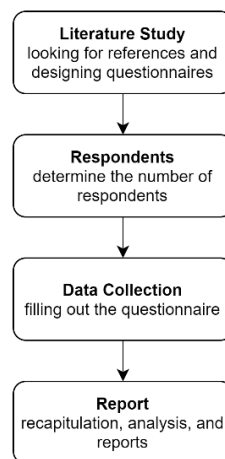


Figure 2. Research process

The usability measurement steps using SUS on the Information Systems study program website consist of four stages. First, literature review, which involves searching for references on usability measurement using SUS from previous journals, and designing the questionnaire using Google Forms to be used by respondents. Second, determining the respondents and the number of respondents who will be the subjects of the study for the analysis. Third, distributing the questionnaire containing the SUS statement items to collect data. Fourth, creating a report and compiling the data from the completed questionnaires to draw conclusions from the analysis.

The questionnaire design process is based on the 10 statement items found in SUS, as shown in Table 2 below (<https://www.Usability.Gov/How-to-and-Tools/Methods/System-Usability-Scale.Html>, n.d.).

Table 2. 10 Statement in SUS

No	Statement
1	You will use this website frequently
2	This website is complicated
3	This website is easy to use
4	You need technical assistance to use this website
5	The features on this website work well
6	There is inconsistency in this website
7	A layperson (new user) will find it easy to use this website
8	This website is difficult to use
9	You feel very confident using this website
10	You need to learn first to use this website

Each statement is assigned a weight from 0 to 4. For positive statements, the score is calculated by subtracting 1 from the weight of each statement, so it is written as  $x_i - 1$ . For negative statements, the score is calculated by subtracting the weight of each statement from 5, so it is written as  $5 - x_i$ . Then, the scores for both positive and negative statements are added together. The SUS score is obtained by multiplying the total score by 2.5 (Rachmi & Nurwahyuni, 2018). The average score is calculated using the following equation:

$$\text{Average value} = \sum_{i=1}^n x_i / N$$

Information,  $x_i$ : total score of respondents  
 N: total of respondents

All respondents fill in the score for each statement using a Likert scale. The Likert scale is a psychometric scale commonly used in questionnaires and is the most widely used scale in survey-based research (Taluke et al., 2019). The rating is done using a scale of 1 to 5, as shown in Table 3 below.

Table 3. Rating Score Scale

1	2	3	4	5
Strongly Disagree (SD)	Disagree (D)	Neutral (N)	Agree (A)	Strongly Agree (SA)

### RESULT

The questionnaire was distributed to users of the tracking system. From the collected data, 10 respondents filled out the questionnaire using Google Forms, which contained 10 statements. All respondents completed the questionnaire, and the answers provided were scored using the given scale. The results of the questionnaire can be seen in Table 4 below.

Table 4. Results questionnaire

Resp.	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
1	4	2	4	2	3	3	4	2	4	2
2	5	1	5	1	5	1	5	1	5	1
3	4	2	4	3	3	5	3	3	3	3
4	4	2	4	3	4	2	4	2	4	3
5	3	4	4	4	5	5	3	3	3	2
6	3	2	4	2	3	3	4	2	4	2
7	4	2	5	2	4	4	3	2	4	2
8	4	3	4	5	5	3	4	2	4	5
9	5	1	5	1	5	1	5	1	5	5
10	3	2	2	2	5	1	4	1	3	2

Explanation of the data calculation from the questionnaire results in Table 4, using the rules explained earlier, yields the following data (taken as an example from respondent 1):

- For P1 (positive statement), scale 4 was chosen, so the score for P1  $\rightarrow x_i - 1 = 4 - 1 = 3$ .
  - For P2 (negative statement), scale 2 was chosen, so the score for P2  $\rightarrow 5 - x_i = 5 - 2 = 3$ .
  - For P3 (positive statement), scale 4 was chosen, so the score for P3  $\rightarrow 4 - 1 = 3$ .
  - For P4 (negative statement), scale 2 was chosen, so the score for P4  $\rightarrow 5 - 2 = 3$ .
  - For P5 (positive statement), scale 3 was chosen, so the score for P5  $\rightarrow 3 - 1 = 2$ .
  - For P6 (negative statement), scale 3 was chosen, so the score for P6  $\rightarrow 5 - 3 = 2$ .
  - For P7 (positive statement), scale 4 was chosen, so the score for P7  $\rightarrow 4 - 1 = 3$ .
  - For P8 (negative statement), scale 2 was chosen, so the score for P8  $\rightarrow 5 - 2 = 3$ .
  - For P9 (positive statement), scale 4 was chosen, so the score for P9  $\rightarrow 4 - 1 = 3$ .
  - For P10 (negative statement), scale 2 was chosen, so the score for P10  $\rightarrow 5 - 2 = 3$ .
- Do the same for respondents 2 through 10.

After calculating the SUS scores from the 10 respondents who filled out the questionnaire, the following SUS scores were obtained:

- Respondent 1:  $28 \times 2.5 = 70$ .
- Respondent 2:  $40 \times 2.5 = 100$ .
- Respondent 3:  $21 \times 2.5 = 52.5$ .
- Respondent 4:  $28 \times 2.5 = 70$ .
- Respondent 5:  $20 \times 2.5 = 50$ .



- f. Respondent 6:  $27 \times 2.5 = 67.5$ .
- g. Respondent 7:  $28 \times 2.5 = 70$ .
- h. Respondent 8:  $23 \times 2.5 = 57.5$ .
- i. Respondent 9:  $36 \times 2.5 = 90$ .
- j. Respondent 10:  $29 \times 2.5 = 72.5$ .

The average score based on the equation explained earlier is 70.

In interpreting the SUS score results, there are several methods that can be used. In this study, two approaches are applied, based on the adjective (quality) and the level of acceptance (acceptable). The scale for interpreting the SUS score results can be seen in Table 5 below:

Table 5. Scale for interpreting SUS score

SUS	Adjective	Acceptable
84,1 – 100	Best Imaginable	
80,8 – 84	Excellent	
78,9 – 80,7		
77,2 – 78,8		Acceptable
74,1 – 77,1	Good	
72,6 – 74		
71,1 – 72,5		
65 – 71		
62,7 – 64,9	OK	Marginal
51,7 – 62,6		

From Table 5 above, it can be seen that the interpretation of the SUS score results can be done using different approaches. The explanation is as follows (Kesuma, 2021):

a. Adjective (Quality)

The raw SUS score can be matched with one of the four qualities: a score above 84 is considered Best Imaginable, a score above 80.7 is considered Excellent, a score above 71 is considered Good, and a score above 51.6 is considered OK.

b. Level of Acceptance (Acceptable)

The interpretation of the SUS score is based on the level of acceptance of the raw SUS score, with a score range of 71.1 – 100 categorized as “Acceptable,” and a score range of 51.7 – 71 categorized as “Marginally Acceptable,” covering the C and D range in the rating scale.

Based on the previous calculation of the average score, which resulted in a score of 70, the final interpretation of the SUS score falls into the adjective quality category of OK and the level of acceptance category of Marginal.

### DISCUSSION

Of course, there are still shortcomings in research, therefore improvements are still needed in carrying out this research. For example, after a usability test has been carried out, the results of the test can be continued by providing recommendations or improvements to the website tracking system design.

### CONCLUSION

The usability assessment of the tracking system website using the SUS method shows a good score, where the website is rated as having a fairly good (OK) adjective rating and is considered marginally acceptable in its usability.

### REFERENCES

- Achmad, S. (2019). Tahun Lalu, Pengguna Aktif BTN Mobile Tumbuh 58 Persen. *Jurnal Pengembangan Teknologi Informasi Dan Ilmu Komputer*, 3(8), 7708–7716. <http://j-ptiik.ub.ac.id>
- Andriyan, W., Septiawan, S. S., & Aulya, A. (2020). Perancangan Website sebagai Media Informasi dan Peningkatan Citra Pada SMK Dewi Sartika Tangerang. *Jurnal Teknologi Terpadu*, 6(2), 79–88. <https://doi.org/10.54914/jtt.v6i2.289>
- Asnawi, N. (2018). Pengukuran Usability Aplikasi Google Classroom Sebagai E-learning Menggunakan USE Questionnaire (Studi Kasus: Prodi Sistem Informasi UNIPMA). *RESEARCH : Computer, Information System & Technology Management*, 1(1), 17. <https://doi.org/10.25273/research.v1i1.2451>
- Firmansyah, F. (2021). Implementasi System Usability Scale Pada Sistem Informasi Manajemen Anggaran Dan Kegiatan Di Badan Pusat Statistik. *Technologia: Jurnal Ilmiah*, 12(3), 165.



- <https://doi.org/10.31602/tji.v12i3.5180>  
<https://www.usability.gov/how-to-and-tools/methods/system-usability-scale.html>. (n.d.).
- Kesuma, D. P. (2021). Penggunaan Metode System Usability Scale Untuk Mengukur Aspek Usability Pada Media Pembelajaran Daring di Universitas XYZ. *JATISI (Jurnal Teknik Informatika Dan Sistem Informasi)*, 8(3), 1615–1626. <https://doi.org/10.35957/jatisi.v8i3.1356>
- M. Agil Kusumadya, Rasmila, Faiz Hidayat, & Dicky Chandra. (2022). Analisis Website Petani Kode Menggunakan SUS (System Usability Scale). *Jurnal Informatika Polinema*, 8(4), 41–46. <https://doi.org/10.33795/jip.v8i4.908>
- Nioga, A., Brata, K. C., & Fanani, L. (2019). Evaluasi Usability Aplikasi Mobile KAI Access Menggunakan Metode System Usability Scale (SUS) Dan Discovery Prototyping (Studi Kasus PT KAI). *Jurnal Pengembangan Teknologi Informasi Dan Ilmu Komputer; Vol 4 No 10 (2020)*, 3(2), 1396–1402.
- Pratama, A., Faroqi, A., & Mandyartha, E. P. (2021). Analisis Tingkat Usability Pada Aplikasi Frostid Menggunakan System Usability Scale (SUS). *Jurnal Ilmiah Edutic: Pendidikan Dan Informatika*, 8(1), 31–38. <https://doi.org/10.21107/edutic.v8i1.12195>
- Purnamasari, S. A., Heryana, N., & Prihandani, K. (2021). Perbandingan Penggunaan System Usability Scale dan Usefull, Satisfaction and Ease of Use Questionnaire pada Usability Testing. *Jurnal Ilmiah Informatika*, 6(1), 59–69. <https://doi.org/10.35316/jimi.v6i1.1236>
- Rachmi, H., & Nurwahyuni, S. (2018). Pengujian Usability Lokamedia Website Menggunakan System Usability Scale. *Al-Khidmah*, 1(2), 86. <https://doi.org/10.29406/al-khidmah.v1i2.1155>
- Ramadhan, D. W. (2019). PENGUJIAN USABILITY WEBSITE TIME EXCELINDO MENGGUNAKAN SYSTEM USABILITY SCALE (SUS) (STUDI KASUS: WEBSITE TIME EXCELINDO). *JUPI (Jurnal Ilmiah Penelitian Dan Pembelajaran Informatika)*, 4(2), 139. <https://doi.org/10.29100/jupi.v4i2.977>
- Sidik, S.Sn, M.Ds, A. (2018). Penggunaan System Usability Scale (SUS) Sebagai Evaluasi Website Berita Mobile. *Technologia : Jurnal Ilmiah*, 9(2), 83–88.
- Sukmasetya, P., Setiawan, A., & Arumi, E. R. (2020). Penggunaan Usability Testing Sebagai Metode Evaluasi Website Krs Online Pada Perguruan Tinggi. *JST (Jurnal Sains Dan Teknologi)*, 9(1), 58–67. <https://doi.org/10.23887/jstundiksha.v9i1.24691>
- Taluke, D., Lakat, R. S. M., Sembel, A., Mangrove, E., & Bahwa, M. (2019). Analisis Preferensi Masyarakat Dalam Pengelolaan Ekosistem Mangrove Di Pesisir Pantai Kecamatan Loloda Kabupaten Halmahera Barat. *Spasial*, 6(2), 531–540.