WEBSITE USABILITY TESTING ON THE INFORMATION AND COORDINATION CENTER OF COVID-19 IN WEST JAVA USING THE SYSTEM USABILITY SCALE

Dwi Andini Putri[1]; Denda Rinaldi Hadinata[2]; Siti Nurwahyuni[3]

Teknik Informatika[1]
STMIK Nusa Mandiri[1]
www.nusamandiri.ac.id[1]
dwiandini@nusamandiri.ac.id[1]

Ilmu Manajemen[2]
Universitas IPB[2]
www.ipb.ac.id[2]
denda.hadinata@gmail.com[2]

Sistem Informasi[3]
Universitas Bina Sarana Informatika[3]
www.bsi.ac.id[3]
siti.swu@bsi.ac.id

Abstract—Indonesia is one of the countries affected by the COVID-19 outbreak. Positive confirmed patients in Indonesia are increasing every day. The people became restless and worried because of this outbreak. The website becomes one of the media used in conveying information on the spread of COVID-19. However, the website has several weaknesses in its use such as, an appearance that is too complicated, writing that is not readable, there is no data update in real-time and unusual menu choices. The official website established by the West Java government in tackling the spread of COVID-19 is pikobar.jabarprov.go.id or known as The Information and Coordination Center of COVID-19 website in West Java Province (PIKOBAR). To minimize the weaknesses and the level of website usability that occurs, the PIKOBAR website needs evaluation and update. The evaluation carried out aims to make the website run well so that it can provide up-to-date and real-time information to the public. In this study, the evaluation of the PIKOBAR website is done by measuring and testing the appearance of usability using the System Usability Scale (SUS) instrument. The results showed that the SUS score obtained was 70.7 which was included in the acceptable, grade C, and good categories. This means that the PIKOBAR website has good usability value and is feasible to be accessed and accepted by Users (Visitors).

Keywords: usability, system usability scale, website, COVID-19

Intisari—Indonesia merupakan salah satu dari sekian negara yang terdampak wabah COVID-19. Pasien yang terkonfirmasi positif di Indonesia semakin bertambah setiap harinya. Masyarakat pun menjadi resah dan cemas akibat wabah ini. Website menjadi salah satu media yang digunakan dalam menyampaikan informasi penyebaran COVID-19. Namun, website memiliki beberapa kelemahan dalam penggunaannya seperti, tampilan yang terlalu rumit, tulisan yang tidak terbaca dengan jelas, tidak ada pembaruan data secara real time, dan pilihan menu yang tidak biasa. Website resmi yang dibentuk pemerintah Jawa Barat dalam menanggulangi persebaran COVID-19 adalah pikobar.jabarprov.go.id atau yang dikenal dengan Pusat Informasi dan Koordinasi COVID-19 Provinsi Jawa Barat (PIKOBAR). Untuk meminimalis kelemahan dan tingkat kebergunaan website yang terjadi, maka website PIKOBAR membutuhkan evaluasi dan pembaruan. Evaluasi yang dilakukan bertujuan agar website berjalan dengan baik, sehingga dapat memberikan informasi secara *up-to-date* dan *real-time* kepada masyarakat. Pada penelitian ini evaluasi website PIKOBAR yang dilakukan adalah dengan mengukur dan menguji tampilan usibilitas menggunakan instrumen *System Usability Scale* (SUS). Hasil penelitian menunjukkan bahwa skor SUS yang diperoleh sebesar 70,7 yang mana termasuk ke dalam kategori *acceptable*, *grade* C dan *good*. Hal ini berarti bahwa website PIKOBAR memiliki nilai kebergunaan yang baik serta layak diakses dan diterima oleh *User* (Pengunjung).

Kata Kunci: usability, system usability scale, website, COVID-19

INTRODUCTION

The Corona Virus, known as COVID-19, first appeared in Wuhan, Hubei Province, China. This virus is the size of small particles that initially infect animals. But the virus develops and infects humans[1]. Information about the spread of the coronavirus is needed by the people because this virus has spread to almost all parts of the world.

Indonesia is one of the countries affected by the COVID-19 outbreak. Positive confirmed patients in Indonesia are increasing every day. The people became restless and worried because of this outbreak.

The website becomes one of the media used in conveying information about COVID-19 dissemination. However, the website has several weaknesses in its use such as, an appearance that is too complicated, writing that is not readable, there is no data update in real-time and unusual menu choices. Making it difficult for website visitors to get information that suits their needs.

The official website established by the West Java government in tackling the spread of COVID-19 is pikobar.jabarprov.go.id or known as The Information and Coordination Center of COVID-19 in West Java Province (PIKOBAR). To minimize the weaknesses and the level of website usability that occurs, the PIKOBAR website needs evaluation and updates to function properly so that it can provide up-to-date and real-time information to the community. One evaluation method that can be used in usability testing with the System Usability Scale (SUS). Responsibility is a condition where a product or service can be used as the user desires without doubt and confusion [2]. Regarding research related to research conducted by research [3] website evaluation and evaluation with heuristic evaluation methods and system usability scale, the results of this study show user satisfaction increased to 72.5. This SUS score states an improvement in the ranking of adjectives to move away "good" and acceptance from "unacceptable" to "acceptable". then the research conducted by [4] evaluation on the UB Faculty of Animal Husbandry website using the usability testing results obtained a score of 62.03 included in the "d" class scale and adjective ranks in the range of "ok" and "good", which means still not acceptable. While research conducted by [5] on usability testing on e-commerce websites uses a system-scale utility method with the results of research showing what research produces good. So the application developed for crafters is following user expectations. the assessment obtained was 72 which was included in the good category and research [6] on the quality assessment of the UX website using the system's usability scale results of

the study showed that the usefulness of the 68.6 websites referring to C or OK was pretty good. The loyalty of website visitors to make another visit (revisit) gets an average value of 3.5095. This value is located in the range 3.40 - 4.20, which shows the loyalty of visitors to re-visit is placed at a high point

.The evaluation method using SUS has previously been carried out by research [7] which tested the usability of the Labor Market Information system managed by the Indonesian Ministry of Labor. The results of this study indicate that the implementation of the information system created has not received acceptance from users as a product or service that can help users find information on job vacancies effectively and efficiently. However, it is different from the SUS test conducted by research [8] which tested the information provider software supporting the implementation of the XVIII Asian Games namely Palembang Guide. The results obtained in this study are Palembang Guide software declared acceptable (acceptable) and included in the excellent rating, so that it can be used as an alternative tool for the public in finding the necessary supporting infrastructure facilities related to the XVIII Asian Games in Palembang.

In this study measurement and usability testing will be carried out using the System Usability Scale (SUS) instrument with the object under study is PIKOBAR website. The appearance of the PIKOBAR website is shown in Figure 1.
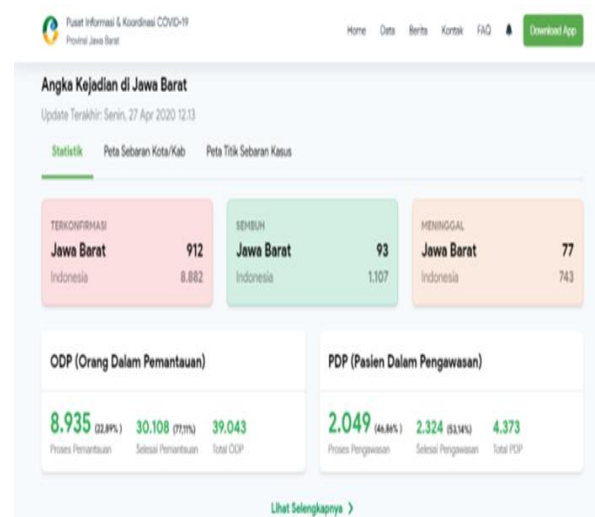

Figure 1. The appearance of the PIKOBAR website

This research is expected to provide recommendations for improvement so that it can satisfy visitors to use the next PIKOBAR website.

MATERIALS AND METHODS

Research Framework

This study begins by preparing a research instrument in the form of a questionnaire of 10 questions distributed using Google Forms. Respondents in this study were citizens of the city of Bogor. The consideration is that the city of Bogor is one of the cities in West Java which is also an area affected by COVID-19.

The selection of respondents in this study uses a probability sampling technique, in which the collection of information from respondents uses the simple random sampling method, namely taking respondents based on that each member of the population has the same opportunity to be selected as a sample.
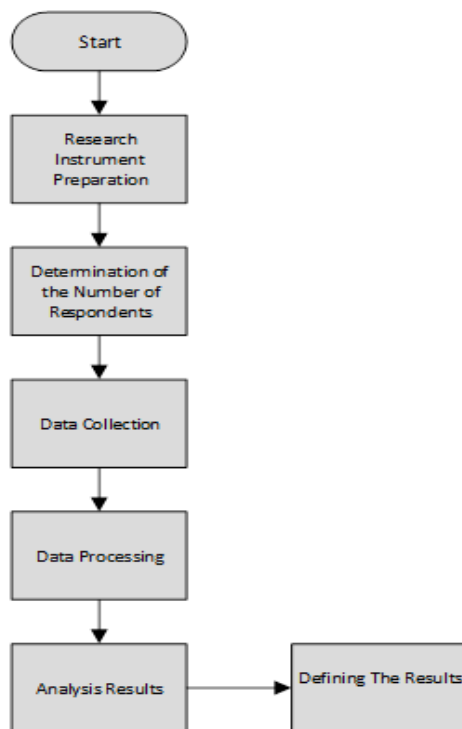

Figure 2 Research Framework

The number of respondents used in this study was 271 people. Determination of the number of sample respondents obtained from the population of the city of Bogor by calculating the determination of sample size using the Roasoft software application. The number of respondents in this study was determined based on research conducted by Ependi in 2019 [9], that the determination of respondents in the System Usability Scale did not have a standard concept or there was no specific determination of the basic theory [9]. This condition is caused by respondents from SUS who are the end-users of a software

product that will be evaluated, namely the PIKOBAR website.

After all, data is obtained the next step is a descriptive analysis process that illustrates the facts of the respondents' answers. Then the data is processed from the research instrument using a test of validity and reliability. Then the results of data processing are analyzed by determining if the data obtained is said to be valid and reliable then the final stage is measuring the calculation of SUS scores. The results of the SUS scores obtained will then be identified following the SUS categorization provisions. Figure 2 shows the framework of the research conducted.

Analysis of the System Usability Scale

This study consisted of ten questions, each of which had a five-point scale including point 1 stating "strongly disagree", point 2 stating "disagree", point 3 stating "doubtful", point 4 stating "agreeing", and point 5 states "strongly agree". Ten statements on the SUS questionnaire given to respondents are shown in table 1.

Table 1. SUS Instrument Questions

No.	Question	Scale
1.	I think that I will often visit the website pikobar.jabarprov.go.id	1-5
2.	I found there is a complicated menu section on the pikobar.jabarprov.go.id website	1-5
3.	I think the pikobar.jabarprov.go.id website is easy to use	1-5
4.	I need the help of another person or technician to use the website pikobar.jabarprov.go.id	1-5
5.	I feel the menu on the pikobar.jabarprov.go.id website is working properly	1-5
6.	I think many things are not appropriate on the website pikobar.jabarprov.go.id	1-5
7.	I think other people will understand how to use the pikobar.jabarprov.go.id website quickly	1-5
8.	I think the pikobar.jabarprov.go.id website is very complicated to use	1-5
9.	I feel comfortable using the pikobar.jabarprov.go.id website	1-5
10.	I have to learn many things first before using the website pikobar.jabarprov.go.id	1-5

In calculating the SUS, the obtained data is then calculated by weighting the score by subtracting one of each odd number question points (1,3,5,7,9). Whereas for questions with an even number (2,4,6,8,10), the weight obtained is five minus the points obtained. Then look for the results of the weighting of the SUS score of each

respondent. The result of weighting is then multiplied by 2.5. So that the total weight of each respondent's SUS score will produce values ranging from 0 to 100, which then counts the average number and results. That average result is called the overall SUS score.

The overall SUS score is then used as evaluation material. The evaluation carried out is by categorizing the SUS score obtained by using several interpretations including categorization based on Acceptability Range, Grade Scale, and Adjective Rating.

In the Acceptability Range the categories are used by following the reference as follows: (1) if the SUS score is less than 50 then it is said not acceptable, (2) if the SUS score is between 50 to 70, then it is said to be marginal and (3) if the SUS score is greater than 70 then it's acceptable.

In the Grade Scale categorization, SUS scores are grouped into 11 grades including grade A + (SUS score ranges from 84.11-100), grade A (SUS score ranges from 80.8 to 84.0), grade A- (SUS score ranges from 78, 9-80.7), grade B + (SUS score ranges from 77.2-78.8), grade B (SUS score ranges from 74.1 to 77.1), grade B- (SUS score ranges from 72.6-74, 0), grade C + (SUS score ranges from 71.1 to 72.5), grade C (SUS score ranges from 65.0 to 71.0), grade C- (SUS score ranges from 62.7 to 64.9), grade D (SUS score ranges from 51.7 to 62.6) and grade F (SUS score ranges from 0 to 51.6) based on research conducted by [10].

Furthermore, in the categorization according to Adjective Rating, SUS scores are grouped into 7 ranking scales consisting of Worst Imaginable, Awful, Poor, Ok, Good, Excellent and Best Imaginable based on research conducted by Bangor in 2009 [11]. Determination of the Acceptability Ranges, Grade Scale, and Adjective Rating categories on the SUS score is shown in Figure 3.
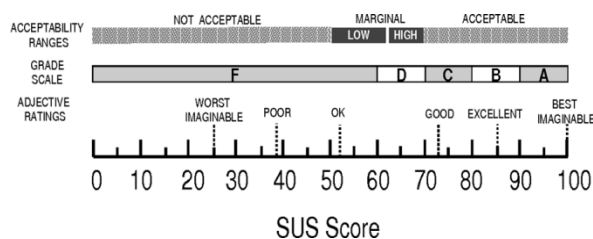

Figure 3. Ranges, Grade Scale, and Adjective Rating categories on SUS scores.

RESULTS AND DISCUSSION

Characteristics of Respondents

Based on the results of the interviews, the majority of respondents were women, with a percentage of 55 percent while 45 percent of male respondents. This shows that the majority of PIKOBAR website visitors among men compared to women are more women. The distribution of questionnaires using GoogleForm distributed through social media such as WhatsApp and Instagram is one of the factors that cause women to visit the PIKOBAR website more.

Furthermore, the age category found that respondents in this study were in the range of 18 to 25 years with a percentage of 69 percent. Furthermore, characteristics based on age in the range of 26 to 65 years are below that by obtaining a percentage of 31 percent. The interview results show that most of the age of PIKOBAR website visitors ranging from 18 to 25 years are millennials who are very friendly with technology, especially the use of the internet.

The level of education a person has can affect the use of the internet. According to the level of education affects the frequency of internet use. To be able to use the internet properly a minimum level of high school education is required because to operate the internet other skills must be mastered namely the skills to use computers and English. In this study, the characteristics based on the latest level of education are divided into 4 of senior high school with a percentage of 64 percent, then a D III level of 8 percent, a Bachelor's level of education gained 23 percent, and a Master's level of 5 percent. The results of the data show that most PIKOBAR website visitors have the last high school education.

Based on the characteristics of the work, the results obtained are that most of the PIKOBAR website visitors are students with a percentage of 36 percent and the rest are 3 percent civil servants, 23 percent private employees, 16 percent entrepreneurs not working 31 percent and others 56 percent. The results of the characteristics of respondents can be seen in full in Table 2.

Table 2. Characteristics of Respondents

Characteristics	Category	Percentage (%)
Gender	Male	45
	Female	55
Age	18-25	69
	26-65	31
Education	Senior High School	64
	DIII	8
	S-1	23
	S-2	5
Occupation	Government Officer	3
	Private Officer	23
	Entrepreneur	6
	Student	36
	Unemployment	11
	Others	21

VALIDITY TEST

Based on the results of testing the validity, it is known that ten questions on the instrument responded by 271 respondents declared valid because they have rxy > rtable with a significance level of 5 percent. The validity test results can be seen in table 3.

Table 3. Validity test results

Questions	rxy	rtable	Information
Q1	0,455	0,119	Valid
Q2	0,384	0,119	Valid
Q3	0,226	0,119	Valid
Q4	0,608	0,119	Valid
Q5	0,269	0,119	Valid
Q6	0,311	0,119	Valid
Q7	0,190	0,119	Valid
Q8	0,363	0,119	Valid
Q9	0,287	0,119	Valid
Q10	0,600	0,119	Valid

Reliability Test

The results of reliability testing in this study showed that the total value of Cronbach's Alpha from the questionnaire was 0.642 belonging to the reliable category, which means the statement of the data obtained had great reliability so that it could be used in repeated measurements.

SUS Score Analysis

The SUS analysis in this section begins by finding the average value of all score assessments distributed to 271 respondents using the rules of the SUS score calculation method. In this study, the results of the assessment of 271 respondents to the PIKOBAR website obtained an average SUS score from all of the respondent's score of 70.7.

In the determination of acceptability ranges, the results show that the PIKOBAR website belongs to the acceptable category. Whereas in determining the grade scale, the PIKOBAR website is included in the grade C category, and in determining the adjective rating it is obtained that the PIKOBAR website is included in the good category. Based on the results of the three categorizations it can be said that the three categories are related to each other which means that the PIKOBAR website has a good usability value and is feasible to be accessed by visitors.

In this study also generated a percentage of each answer from each question given to respondents. The percentage results indicate that the average respondent gave a positive response to the PIKOBAR website. But there are still some respondents who gave negative or neutral responses. In this section, the results show that there is 4 percent of respondents giving responses that this website is still considered complicated. Some respondents stated that the PIKOBAR website was not yet dynamic enough so it was hoped that it was necessary to correct the shortcomings on the website.

CONCLUSION

Based on the results of the analysis and discussion, it can be concluded that the majority of PIKOBAR website visitors are female, aged between 18 and 25 years old, at least high school education and most visitors are students.

By using the System Usability Scale method, the SUS score of 70.7 is acceptable, acceptable, grade C, and good. This means that the PIKOBAR website has a good usability and is suitable for visitors to access.

REFERENCE

[1]   A. Susilo *et al.*, "Coronavirus Disease 2019 : Tinjauan Literatur Terkini Coronavirus Disease 2019 : Review of Current Literatures," *J. Penyakit Dalam Indones.*, vol. 7, no. 1, pp. 45–67, 2020.

[2]   D. C. Jeff Rubin, *Hadbook of usability testing, How to plan, design and conduct effective tests*, vol. 17, no. 2. 2001.

[3]   W. S. Wibowo, H. M. Az-zahra, and F. A. Bachtiar, "Evaluasi dan Rekomendasi Tampilan Website E-Complaint Universitas Brawijaya Pada Perangkat Bergerak Menggunakan Metode Heuristic Evaluation," *J. Pengemb. Teknol. Inf. dan Ilmu Komput. Univ. Brawijaya*, vol. 2, no. 12, pp. 7192–7201, 2018.

[4]   W. M. Sari, A. Rachmadi, and H. M. Az-zahra, "Evaluasi pada Website Fakultas Peternakan Universitas Brawijaya menggunakan Usability Testing," vol. 3, no. 7, pp. 6503–6507, 2019.

[5]   A. A. Jiwa Permana, "Usability Testing Pada Website E-Commerce Menggunakan Metode System Usability Scale (Sus) (Studi Kasus : Umkmbuleleng.Com)," *JST (Jurnal Sains dan Teknol.*, vol. 8, no. 2, p. 149, 2019, doi: 10.23887/jst-undiksha.v8i2.22858.

[6]   F. F. Laksana and S. Suyoto, "Pengukuran Kualitas Ux Website Menggunakan Sus," *Comput. Eng. Sci. Syst. J.*, vol. 4, no. 2, p. 138, 2019, doi: 10.24114/cess.v4i2.12928.

[7]   Kharis, P. I. Santosa, and W. W. Winarno, "Evaluasi Usability Pada Sistem Informasi Pasar Kerja Menggunakan System Usablity Scale (Sus) 1*," *Pros. Semin. Nas. Sains Dan Teknol. 10 2019*, pp. 240–245, 2019.

[8]   U. Ependi, F. Panjaitan, and H. Hutrianto,

"System Usability Scale Antarmuka Palembang Guide Sebagai Media Pendukung Asian Games XVIII," *J. Inf. Syst. Eng. Bus. Intell.*, vol. 3, no. 2, p. 80, 2017, doi: 10.20473/jisebi.3.2.80-86.

[9] U. Ependi, A. Putra, and F. Panjaitan, "Evaluasi tingkat kebergunaan aplikasi Administrasi Penduduk menggunakan teknik System Usability Scale," *Regist. J. Ilm. Teknol. Sist. Inf.*, vol. 5, no. 1, p. 63, 2019, doi: 10.26594/register.v5i1.1412.

[10] J. R. Lewis and J. Sauro, "Item Benchmarks for the System Usability Scale," *J. Usability Stud.*, vol. 13, no. May 2018, pp. 158–167, 2018.

[11] A. Bangor, T. Staff, P. Kortum, J. Miller, and T. Staff, "Determining what individual SUS scores mean: adding an adjective rating scale," *Determ. what Individ. SUS scores mean adding an adjective Rat. scale*, vol. 4, no. 3, pp. 114–123, 2009.