

Evaluation System Usability Scale (SUS) Method on Batik Website

Nur Rochman Wibisono

Department of Industrial Engineering, Islam University of Indonesia, Kaliurang Street 14,5 Yogyakarta, Indonesia

Keywords: System Usability Scale, Usability, Evaluation of Batik Website.

Abstract: Indonesia's advanced technology has developed rapidly to become sophisticated and modern. According to the data from the Ministry of Communications and Information Technology (2019), the number of internet users in Indonesia has reached 153 million, with a penetration rate of 56 percent throughout the country. The number of smartphone users has increased to 140.4 million, or 26.17 percent. Based on the available data, many users have smartphones equipped with internet access that can access all kinds of information, including websites. Most websites do not pay enough attention to the features, especially on batik websites, which creates discomfort for users. Therefore, the aim of this research is to evaluate the factors in batik websites using the system usability scale (SUS) method with 6 scenarios from 3 batik websites as samples. In scenario 1 to evaluate product catalogues, scenario 5 to evaluate the search form, and scenario 6 to evaluate product promo information, batik Semar is the most superior with an average of 70 points. Meanwhile, in scenario 2 to evaluate product descriptions, scenario 3 to evaluate product specifications, and scenario 4 to evaluate product name and location, batik Danarhadi is the most superior with an average of 70 points.

1 INTRODUCTION

The advancement of technology has developed rapidly, becoming increasingly sophisticated and moving towards a sophisticated and modern information age, keeping up with all technological advancements (Andry, 2018). Information technology on smartphones is equipped with the internet, which can access all information, one of which is a website.

Batik is one of the distinctive cultural features of Indonesia that must be preserved. The implementation of industry 4.0 is one of the reasons for the design of the Batik Raja Rizki website prototype, to make it easier for consumers to find information about Batik Raja Rizki products online. Previous research has only focused on fashion, so there has been no discussion of batik products.

Most websites do not pay attention to features, especially functionality. This creates an uncomfortable feeling for users. According to the research of (Putra & Samsinar, 2016) on Raubel Men's Wear, the processing of unstructured data is not well structured. In WE Clothing, product ordering is only done by phone or offline, which is not flexible in terms of time and place, leading to the possibility of large errors in inputting data (Harries et al., 2015).

The Mimoze product does not have an attractive visual, so the Mimoze product is not well known (Rizki & Hadiati, 2019). (Kurniawan's, 2019) research on e-commerce batik clothing production does not have a satisfaction variable, so the value of the customer satisfaction variable for e-commerce is unknown. (Santoso et al., 2018) in designing the batik marketplace user interface, product selection cannot be done via smartphone, making buyers less flexible in choosing products online through the smartphone browser website. The problems from the various websites above can be evaluated by improving the website interface. Benefits for user to make it easier operation batik website with user friendly interface feature and be accessed via smartphone browser.

A website has an interface that connects users with the technology used. According to (Yasin & Yumarlin, 2016), information technology has various interface designs that suit the user's functions and needs. (Nurlifa & Kusumadewi, 2014) argued that what connects users with websites or technology can be called a user interface. This user interface has various designs that suit its needs. Based on the above research, this study aims to analyse the factors that increase the usability of the batik website interface using the SUS approach.

2 METHOD

2.1 Questionnaire System Usability Scale (SUS)

A usability testing concept introduced by John Brooke in 1986, is a reliable usability scale that can

be used to evaluate the usability of a system broadly. The results of calculations using the questionnaire method will be collected into a value, which can be used as a consideration to determine whether a website is feasible or not feasible (Pudjoatmojo et. al, 2016). The following is the SUS questionnaire:

Table 1: SUS Questionnaire Statement.

No	Questionnaire Statement
1	I think I will want to use this website more often
2	I find that this website does not need to be this complicated
3	I think the website is easy to use
4	I think I will need assistance from a technical person to be able to use this website
5	I found the various functions on this website well integrated
6	I think there are too many discrepancies on this website
7	I imagine that most people will learn this website very quickly
8	I find this website very complicated to use
9	I feel very confident using this website
10	I need to learn many things before I can start using this website

Then for the assessment of the SUS questionnaire (Brooke, 2013), namely:

1) The scale used strongly disagrees (strongly disagrees) to strongly agrees (strongly agrees) is 1 to 5; 2) For odd numbered statements it is calculated based on the value of the user's response minus the value of 1; 3) Even numbered statements are calculated based on the value of 5 minus the value of the user's response; 4) Add up the response values that have been calculated in point 2 and point 3 above, then multiply the result by the value of 2.5. The results of this calculation will convert the value range to 0 -100.

(Jeff Sauro, 2011) interprets the SUS score by ranking the proportions and classes from A to F, where A is the best class and F is the worst class.

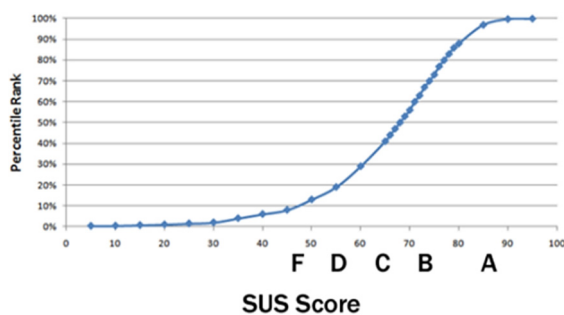


Figure 1: Percentage Rating and Letter Grades.

Provisions for percentage ranking and letter grades (Jeff Sauro, 2011), namely: 1) Grade A: score

≥ 80.3 , percentage $\geq 90\%$; 2) Grade B: $74 \leq \text{score} < 80.3$, $70\% \leq \text{percentage} < 90\%$; 3) Grade C: $68 \leq \text{score} < 74$, $40\% \leq \text{percentage} < 90\%$; 4) Value D: $51 \leq \text{score} < 68$, $20\% \leq \text{percentage} < 40\%$; 5) F value: $\text{value} < 51$, $\text{percentage} < 20\%$.

The SUS questionnaire can also be interpreted on the nature of the rating to further clarify the level of usability of a system, then translated into the level of user acceptance of a system to determine whether the system is acceptable or not by users (Bangor et. al, 2009).

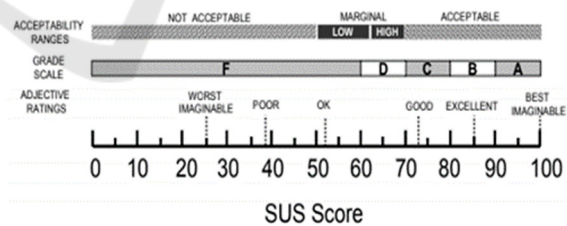


Figure 2: Ranking of adjectives and ranges of acceptability.

The value of the SUS questionnaire obtained represents the level of product usability. The final score in this questionnaire is divided into 3, namely Not Acceptable, with a value between 0-50.9, the Marginal category, with a value between 51-70.9, and Acceptable, with a value between 71-100 (Ardiansyah, 2016).

2.2 Test Scenario

Tests given to users make it easier for respondents to assess a website (Sastramihardja et. al, 2008). According to (Nielsen, 2014), several things must be considered when designing scenario assignments, namely: 1) The tester asks the user to do X without explaining but gives a brief scenario of what the user must do and gives a little explanation of why the user does X; 2) Make real tasks, if you are going to test a website, you must ensure that the user is a real website user; 3) help the user to act, not for which the user acts on personal will.

2.3 How to Choose SUS Factors and Scenarios

According to ISO 9241-11, system usability scale measurements can include effectiveness (user's ability to complete a task), efficiency (level of resources to complete a task), and satisfaction (user's subjective reaction when running the system). To determine the level of user satisfaction, use the Usability Scale System which consists of 10 question items regarding broad views regarding subjective usability assessments (Brooke, 1996), as follows:

Table 2: SUS Questionnaire.

Questionnaire Statement	Strongly Disagree	Disagree	Doubtful	Agree	Strongly agree
	-1	-2	-3	-4	-5
I think that I will want to use this <i>website more often</i>					
I found that this <i>website</i> does not need to be this complicated					
I think this <i>website</i> is easy to use					
I thought that I would need assistance from a technical person to be able to use this <i>website</i>					
I found the various functions on this <i>website</i> well integrated					
I think there are too many discrepancies on this <i>website</i>					
I imagine that most people will find it easy to learn this <i>website</i> very quickly					
I found this <i>website</i> very complicated to use					
I feel very confident to use this <i>website</i>					
I need to learn many things before I can start using this <i>website</i>					

2.4 List of Questions per Scenario

In this study, a scenario was carried out that aimed to find out the weaknesses of 3 similar websites (batik danar hadi, batik keris, and batik semar so that it could be used as a research analysis by determining an object that needed to be tested using the SUS questionnaire (Wilda Kusnawati, 2018), that is :

- 1) The user selects the desired batik product catalog;
- 2) The user sees the description of the desired batik product;
- 3) Users know the specifications of the desired batik product;
- 4) Users search for information on the name and location of the associated batik location;

- 5) Users search for certain products through the search form;
- 6) Users search for the latest information on products and promos from related batik.

3 RESULTS AND DISCUSSION

3.1 Results of SUS Values per Scenario Tested

3.1.1 Scenario 1

After conducting an assessment of 3 similar batiks, namely Danar Hadi Batik, Keris Batik, and Semar

Batik with the SUS questionnaire, then scenario 1: The user selects the desired batik product catalog to get a score of 70 on Semar Batik, with a grade scale of C, adjective risk (OK), and included in the assessment provisions, as shown in Figure 3.

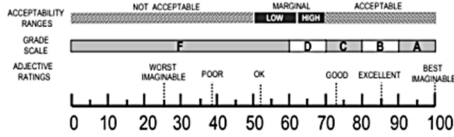


Figure 3: SUS Score Scenario 1.

3.1.2 Scenario 2

After conducting an assessment of 3 similar batiks, namely Danar Hadi Batik, Keris Batik, and Semar Batik with the SUS questionnaire, then scenario 2: The user sees the description of the desired batik product, gets a score of 71 on Danar Hadi Batik, with a grade scale C, adjective rating (OK) and enter into the terms of assessment, as shown in Figure 4.

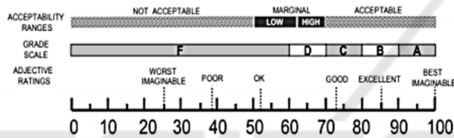


Figure 4: SUS Score Scenario 2.

3.1.3 Scenario 3

After assessing 3 similar batiks, namely Danar Hadi Batik, Keris Batik, and Semar Batik with the SUS questionnaire, then scenario 3: The user knows the specifications of the desired batik product, gets a score of 71.2 on Danar Hadi Batik, with a grade scale C, adjective rating (OK) and enter the terms of the assessment, as shown in Figure 5.

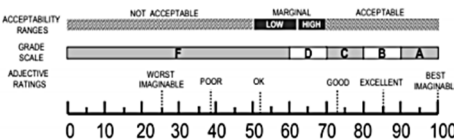


Figure 5: SUS Score Scenario 3.

3.1.4 Scenario 4

After assessing 3 similar batiks, namely Danar Hadi Batik, Keris Batik, and Semar Batik with the SUS questionnaire, then scenario 4: The user searches for information on the name and location of the related batik location, getting a score of 70.2 on Danar Hadi Batik, with a grade C scale, adjective rating (OK) and

enter the terms of the assessment, as shown in Figure 6.

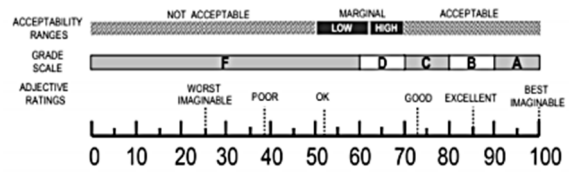


Figure 6: SUS Score Scenario 4.

3.1.5 Scenario 5

After evaluating 3 similar batiks, namely Danar Hadi Batik, Keris Batik, and Semar Batik with the SUS questionnaire, then scenario 5: The user searches for a particular product through the search form and gets a value of 70.8 on Batik Semar, with a grade scale of C, an adjective rating (OK) and enter the terms of assessment, as shown in Figure 7.

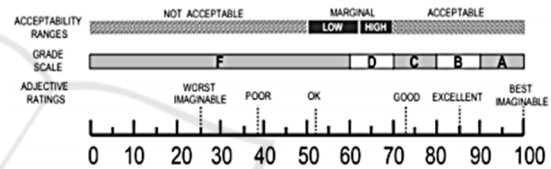


Figure 7: SUS Score Scenario 5.

3.1.6 Scenario 6

After assessing 3 similar batiks, namely Danar Hadi Batik, Keris Batik, and Semar Batik with the SUS questionnaire, then scenario 6: The user searches for the latest information on products and promos from related batik gets a score of 71.7 on Danar Hadi Batik, with grade scale C, adjective rating (OK) and enter the terms of the assessment, as shown in Figure 8.

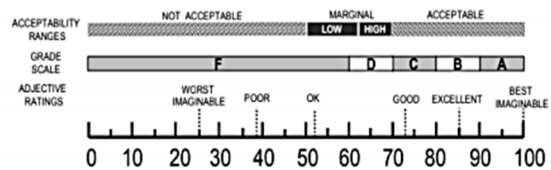


Figure 8: SUS Score Scenario 6.

3.2 Problems / Insights

Table 3: Defining the problem.

Problem	Insights
Candidate user difficulty when doing search type batik products.	Add feature type in category batik search, so could make it easy for the respondent moment look for type desired batik product
Candidate users lack information about the size of batik products.	Add an explanation size chart on every batik product for sale on the website, so respondents do wrong choose the size desired batik product.
The candidate user has difficulty for contact customer service.	Add feature live chat online real-time, so respondents get clear information from party customer service on the website.
Candidate user confusion moment choose batik products.	Repair feature election batik products on the website, so existing features could be integrated with good and clear.
Candidate users look for desired batik products but are not found on related websites.	Do maintenance routine to the website, so available batik products will always be up to date every week following the development offered batik products.
Prospective users find it difficult to find batik products based on price ranges.	Added category-based feature price, thus anticipating misunderstandings between prospective buyers and sellers regarding the price of batik products.
Prospective users feel that the selection of expedition options for sending batik products is incomplete.	Adding expedition options for sending batik products according to the destination of prospective buyers, so that prospective users can be flexible in selecting expeditions to all destination cities for batik product buyers.
Prospective users do not know the appearance of batik products that are in great demand by buyers.	Adding features to the home section in the form of best-seller batik products, promos, batik product categories, and tag lines, so that potential users can find out the batik products offered by the batik website.
Prospective users lack information on the category of these batik products.	Added features for the types of batik product categories in the form of men, women, and children, so that potential users can easily understand when making selections in the category of types of batik products.
Prospective users are confused about finding offline stores.	Added a description of the google map to the offline batik shop address description feature, making it easier for potential users when they want to come offline.
Prospective users need an attractive user interface display.	Beautify the appearance of the website prototype in the form of website colors, dominantly white and blue according to the image of the batik shop, so that prospective prototype users are interested in buying the desired batik products.
Prospective users need a visual form of the batik product in detail.	Adding photos of batik products in the form of slide shows, batik products according to availability with the image of the batik shop, so that it becomes an attraction for potential users to buy the desired batik product.
Prospective users do not yet know which batik products are in demand by buyers.	Adding the best seller feature in the form of self-produced batik products, namely: robe, hem/shirt, and blouse (lawasan, slogan), making it easier for prospective users to make a detailed selection of the batik products to be purchased.
Characteristics of the seller need to differentiate from other batik shops.	Adding a confusing tagline, looking for a batik outfit? we provide various options for you,
Prospective users are confused when looking for the desired batik product.	Add search features to the navbar, so that you can recommend batik products that you are looking for according to the product you want.
How do users avoid getting confused when looking for the desired batik product?	Added search features to the nav bar.
How do users avoid getting confused when looking for the desired batik product?	Added search features to the nav bar.

3.3 How / Might

At this stage to broaden the point of view of solving the problems in table 3. The researcher used the How Might We (HMW) method. The way this method

works is to change all existing statements into a question. Statements on this problem are answered regarding every possible way to solve it (Might). Information and steps to complete the solution using the How Might We method. The following is the process from HMW, namely:

Table 4: How Might We.

How?	Might?
How method resolve the difficulty in doing search type batik products by a user?	Make a feature new in the category batik search ie feature type of batik on the website.
How did users know full-size details to offer batik products on the website?	Explain the size chart of batik products in the column description product on the website.
How do users contact customer service regularly responsive?	Make a feature new that is feature live chat online in real-time.
how the user could with easy choose desired batik product?	Repair system on feature election batik products with easy integration user.
How user could look for desired batik products in a manner complete on the website?	schedule time maintenance and product updates in a manner routine to the website.
How can users search for batik products based on price ranges?	Added category-based feature price
How can users choose the desired batik shipping expedition option?	Adding expeditionary options for shipping batik products according to the destination of prospective buyers.
How do users find out the appearance of batik products that are in great demand by buyers?	Adding features to the home section in the form of best-seller batik products, promos, batik product categories, and tag lines
How can users not lack information about the category of batik products?	Adding features for the types of batik product categories in the form of men, women, and children.
How to make it easier for users to easily find offline store locations?	Added a description of the google map to the offline batik shop address description feature, making it easier for potential users when they want to come offline.
How do you make a user interface display that is attractive to website users?	Website prototype in the form of website colors, dominantly white and blue according to the image of the batik shop.
How can users see the visual appearance of batik products in detail?	Add photos of batik products in the form of slide shows, batik products according to availability with the image of the batik shop.
How do users find out which batik products are of interest to buyers?	Adding the best seller feature in the form of self-produced batik products, namely: robe, hem/shirt, blouse (lawasan, sogan).
What are the characteristics of the seller's shop to differentiate it from other batik shops?	Adding a confusing tagline, looking for a batik outfit? we provide various options for you.
How to make it easier for users to find the desired batik product?	Adding search features to the navbar,
How to see batik products based on the price range?	Added category-based feature price.
How do users avoid getting confused when looking for the desired batik product?	Added search features to the nav bar.

3.4 Brainstorming

At the stage of gathering ideas through brainstorming, the aim is to collect ideas so that they can solve all existing problems. This process is carried out with the

owner and potential users of similar websites. Each – Each write down all the ideas that focus on solving the core problem. The results of the brainstorming process will be processed based on aspects of user interest and the prototype of the Batik Raja Rizki

website. The results obtained are: 1) Website prototype maintenance; 2) Features of the location of the batik shop are included in the google map; 3) Available stock information for batik products; 4) Added size chart to the product description; 5) Added features for the category of batik products; 6) Live chat feature in real-time.

4 CONCLUSIONS

Based on the research conducted on three similar websites (Batik Dinar Hadi, Batik Keris, and Batik Semar) using SUS and HMW (Brainstorming) methods, it can be concluded that:

a) The catalog of batik displayed on the website still does not meet the user's needs to view the required batik visual; b) The description, specifications and size of batik products on the website are still incomplete; c) The number of batik stock on the website is not clearly displayed, and often not in accordance with the actual stock; d) The websites studied do not have a unique characteristic that makes it easier for users to remember the batik brand; e) Sales/Customer services are difficult to reach via the website; f) It is difficult to find the location of the offline batik outlet if checked via the website.

Based on the issues and the objective of this research to evaluate the factors of the batik website problems and provide improvement suggestions for the future, the steps are:

a) The batik catalog is displayed with an attractive, clear and user-friendly visual model; b) The description, specifications, and size of the batik products are written in detail, concise and informative; c) Batik stock is updated regularly with a fixed schedule and the schedule for regular stock update is posted on the website; d) A tagline is created according to the batik brand, becoming the characteristic of the brand and placed on the homepage in a bold font for easy user recognition. e) Sales/customer service can be chatted in real-time through the website or a third-party application such as WhatsApp. f) The location of the batik outlet must be registered on Google Maps and posted on the website.

REFERENCES

Andreas Schumacher, SelimErol, & Wilfried Sih. (2016). A Maturity Model for Assessing Industry 4.0 Readiness

- and Maturity of Manufacturing Enterprises. *Procedia CIRP*, 161-166.
- Alimuddin Yasin, Yumarlin MZ. (2016). UJB Web Evaluation Using Theo Mandel's Golden Rules Of User Interface Design. *Journal of Information Technology and Multimedia*. STMIK Amikom Yogyakarta. Vol 4 No 1
- Aditia Julianto.(2020). Website-Based Application Interface Design Redesign Using the User-Centered Design Method (Case Study: Petshopgrosir). Doctoral Dissertations. Indonesian Computer University.
- Deif, A. (2011). A system model for green manufacturing. *Journal of Cleaner Production*, 27-36.
- Deny Andry, Johanes Fernandes. (2018). Measurement of E-Learning Success by Adopting the Delone & Mclean Model. *Journal of Business Information Systems*. Her Majesty's University. Vol 8 Nos 68-75.
- Foster. (2014). *Software Engineering. A Methodical Approach*. Apress, New York, USA.
- Fakhrudin, Dimas et al. (2018). "Development of Information Design and Learning Javanese Script Through Website Media." *ANDHARUPA: Journal of Visual & Multimedia Communication Design*, vol. 5, no. 01, pp. 1-23.
- International Organization for Standardization (ISO) Switzerland. SO FDIS 9241-210. 2009. Ergonomics of human-system interaction – Part 210: Human-Centered design for interactive systems (formerly known as 13407)
- Supraptini. (2002). The Effect of Industrial Waste on the Environment in Indonesia. *Health Research and Development Media Volume XII Number 2*.
- Sutalaksana, IZ (2006). *Work Procedure Technique. Laboratory of Working Procedures & Ergonomics of Industrial Engineering ITB Bandung*.
- Kusnawati, W., Rokhmawati, RI, & Rachmadi, A. (2018). User Experience Analysis on E-Commerce Websites (Studies on klikindomaret.com and alfacart.com). *Journal of Development of Information Technology and Computer Science e-ISSN*, 2548, 964X.
- Lallemant, C., Gronier, G., & Koenig, V. (2015). User experience: A concept without consensus? Exploring practitioners' perspectives through an international survey. *Computers in Human Behavior*. 43:35-48.