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Comparative Analysis of Usability Value on Online Shop Fashion Websites Using the System Usability Scale (SUS)

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Abstract

According to the We Are Social survey conducted in April 2021, Indonesia leads the world in e-commerce usage. The growing popularity of e-commerce, particularly in the fashion sector, presents significant opportunities for online fashion shops in the country. These e-commerce platforms offer mobile applications and accessible websites that don't require downloading. The quality of an e-commerce website plays a crucial role in attracting online shoppers. This research investigates the variations in usability among top fashion online shops recognized with the retail category's top brand award. The websites under consideration include Zalora.co.id, Berrybenka.com, Fashiontoday.co, and Cottonink.co.id. The System Usability Scale (SUS) method, along with SUS Analysis toolkit or other applicable tools, is employed to assess the usability level of these websites. The average SUS scores for Zalora.co.id, Berrybenka.com, Fashiontoday.co.id, and Cottonink.co.id are 59.3919, 58.5135, 56.4189, and 57.6351, respectively. These scores indicate varying usability levels among the four websites. However, based on the grading scale, all four websites fall into grade D, signifying an "OK" rating. The acceptability level is marginal, and their Net Promoter Score (NPS) falls into the detractor category.

Keywords: E-Commerce, SUS method, Usability Testing, Online Shop Fashion

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I. INTRODUCTION

THE peak of technological development began in 2000 when humans used information and telecommunications technology every time. This technology provides convenience ranging from communication, information, education, and entertainment to transactions. Several technological transformations have been utilized for human activities, including digital transaction technology, digital activity technology, and digital companies. One example of this technological transformation is e-commerce [1]. As seen in Figure 1, Indonesia is a country that has the highest percentage of e-commerce usage in the world, namely 88.1%.

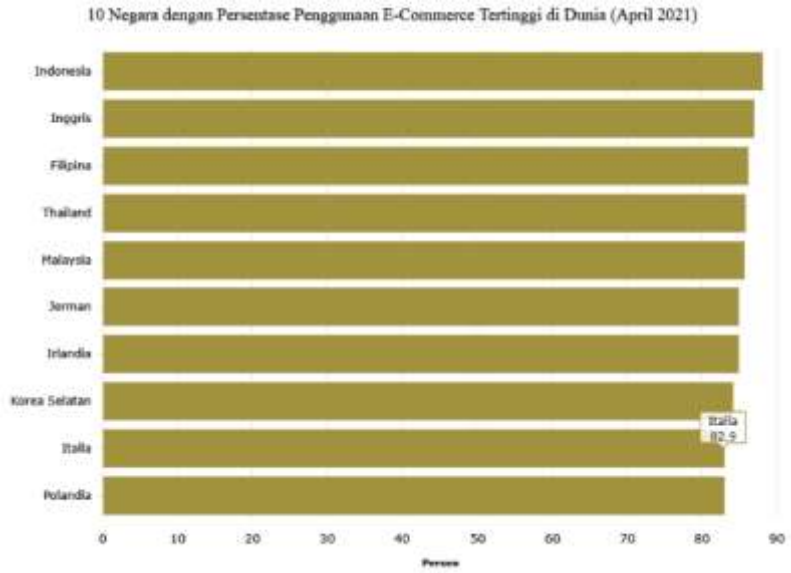

Fig. 1. The highest Percentage of E-commerce Users in The World [2]

Not only that, Figure 2 shows the results of the We Are Social survey in September 2019, where the highest e-commerce customer activity in Indonesia is looking for products/services to buy online and visiting retail sites. The survey results provide information that the e-commerce products most sought after by visitors are clothing with a percentage of 67.10%, shoes with a percentage of 20.20%, bags with a percentage of 20%, and watches with a percentage of 7.60% [3].

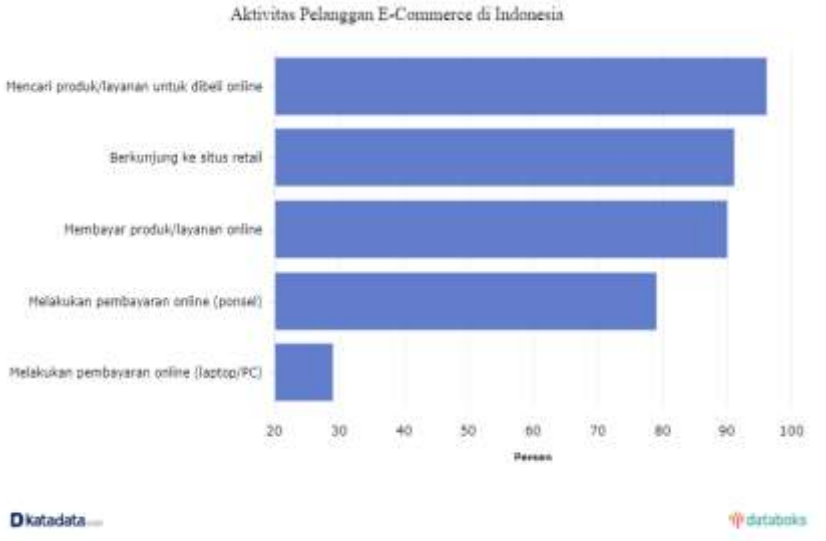

Fig. 2. The highest percentage of e-commerce customer activity in the world [4]

The increasing use of e-commerce in Indonesia and the most sought-after e-commerce products in the fashion sector make online fashion shops potentially good in Indonesia. Around 95% of members of the Indonesian Retailers Association (Aprindo) have switched to taking advantage of the digital era by using digital platforms [5]. The development of e-commerce engaged in the fashion sector apart from having a mobile application, there is also a website that can be accessed without having to download it on the device used. An e-commerce website not only offers products but also must prioritize appearance because it is a major factor in increasing product purchases by site visitors [6]. The quality of the website influences the number of users who shop on e-commerce websites [7]. The standard of its users determines the high and low quality of the website. Measuring usability value can be used as a measuring tool to measure the quality of websites, especially e-commerce [8].

A website can be successful if users receive experience in terms of appearance and comfort when using the website [8]. Based on the previously described data, this study aims to determine whether there are differences in the usability value of websites in the field of online shop fashion contained in the top brand award in the retail category. The websites included in the top brand award are Zalora.co.id, Berrybenka.com, Fashiontoday.co, and Cottonink.co.id. That website is a fashion brand which is the top brand in Indonesia based on the assessment of the criteria of brand awareness by customers (top of mind), last usage (last usage), and repurchase value (future intention) not based on the usability value of the site [9].

There are many questionnaires in measuring usability, one of which is the System Usability Scale (SUS) questionnaire. The SUS method is a measuring tool that assesses a product's usability [10]. So, this research aims to investigate the variations in usability among top fashion online shops recognized with the retail category's top brand award. The websites under consideration include Zalora.co.id, Berrybenka.com, Fashiontoday.co, and Cottonink.co.id. The System Usability Scale (SUS) method, along with SUS Analysis toolkit or other applicable tools, is employed to assess the usability level of these websites.

II. RESEARCH METHOD

In this research, the authors used several stages. Starting from the beginning to the end of the research in accordance with the objectives required in this study. The stages of this research are shown below:

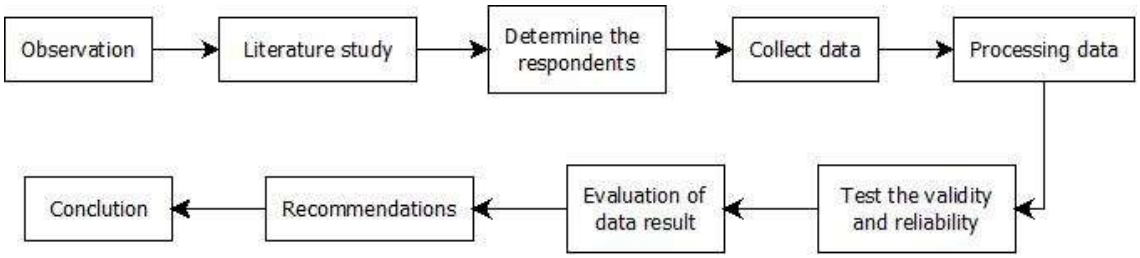

Fig. 3. Research Flowchart

A. Observation

This research began by observing the online shop fashion website on the Top brand award site and searching for data on the percentage of e-commerce usage in Indonesia, the percentage of e-commerce customer activity, the percentage of shopping methods in Indonesia to the percentage of the most searched and purchased categories by Indonesian people.

B. Literature Study

The next step is to search the journals from various references, such as previous research journals related to the usability analysis of online fashion shop websites using the SUS method. This step aims to strengthen the problems discussed in this study so that they become the basis for further research.

C. Determine The Respondents

According to [10], in determining the sample, the respondents stated that a sample size of more than 30 and less than 500 is suitable for most studies. The determination of respondents in this study used a simple random sampling technique, in which the questionnaires were distributed through various social media, and the respondents were users of the online fashion shop website.

D. Collect Data

Furthermore, at this stage, questionnaires are collected by distributing questionnaires to respondents. The websites tested were the top websites in the Top Brand award for the last three years, namely Zalora.co.id, Berrybenka.com, Fashiontoday.co, and Cottonink.co.id. Usefulness value measurement uses a questionnaire from the SUS method. The System Usability Scale (SUS) is a measuring tool for usability testing. The SUS Questionnaire has 10 statements as follows:

TABLE I. SUS STATEMENT ITEMS [10]

Number	SUS Statement Items
1	I think that I would like to use this system frequently
2	I found the system unnecessarily complex
3	I thought the system was easy to use
4	I think that I would need the support of technical person to be able to use this system
5	I found the various functions in this system were well integrated
6	I thought there was too much inconsistency in this system
7	I would imagine that most people would learn to use this system very quickly
8	I found the system very cumbersome to use
9	I felt very confident using the system
10	I needed to learn a lot of things before I could get going with this system

E. Processing Data

The next step is to process the data using the SUS calculation method. This study uses Microsoft Excel to recapitulate respondent data and the Sus.mixability.de tool to obtain an accurate average SUS score. The formula for calculating the average SUS score is as follows [11]:

1. In odd statements (1,3,5,7,9), the score given by the respondent minus 1 (1)

$$\sum Px - 1 \tag{1}$$

2. Even statements (2,4,6,8,10), then 5 minus the score given by the respondent (2)

$$\sum 5 - Pn \tag{2}$$

3. The results of the above calculations are then added up and multiplied by 2.5 (3)

$$\left(\left(\sum Px - 1\ \right) + \left(\sum 5 - Pn\ \right) \times 2{,}5\right) \tag{3}$$

4. The last step is to calculate the average SUS score (4)

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

F. Test The Validity and Reliability

The next stage is testing the validity and reliability of the instrument of the research question to find out whether the question is following the required data. This test uses SPSS software to determine valid variables to proceed to the next stage. The following are the provisions of the validity test [10]:

1. If $r_{count} \geq r_{table\ (sig.0{,}05)}$ then the instrument or questionnaire item significantly correlates with the total score declared valid.
2. If $r_{count} \leq r_{table\ (sig.0{,}05)}$ Then the instrument or questionnaire item significantly correlates with the total score declared invalid. The formula to find out the r_{count} (5):

$$r_{hitung} = \frac{n \times (\sum XY) - (\sum X) \times (\sum Y)}{\sqrt{[n \times \sum X^2 - (\sum X)^2] \times [n \times \sum Y^2 - (\sum Y)^2]}} \tag{5}$$

Reliability test using Cronbach's alpha formula. The reliability is high if the alpha is between 0.70 and 0.90. If the alpha is 0.50 to 0.70, the reliability is moderate, and if the alpha is <0.50, the reliability is low. The formula to find out Cronbach's alpha [10] (6):

$$r_{11} = \left(\frac{n}{n-1}\right)\left(1 - \frac{\sum {\sigma_t}^2}{{\sigma_t}^2}\right) \tag{6}$$

G. *Evaluation of Data Result*

Evaluate the data calculations done previously to determine the rating scale from calculating the average SUS score as can be seen in Fig. 4.

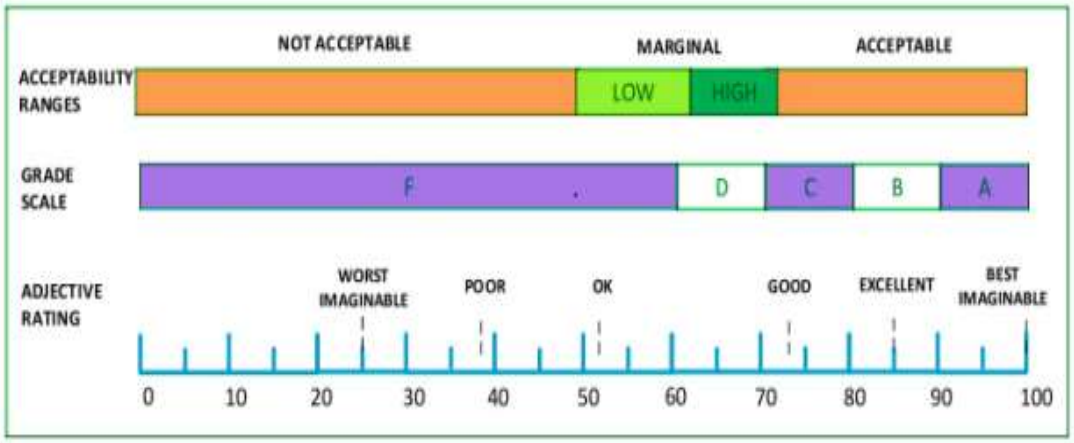

Fig. 4. Grading Scale [12]

H. *Recommendations*

The recommendation step is to provide recommendations on each website for use as suggestions for improvement. These recommendations are based on the results obtained by each website from the answers to the SUS questionnaire.

I. *Conclusion*

This last stage concludes the SUS results of the four online shop fashion websites, which are analyzed by making recommendations based on the relationship between the 10 SUS items and the percentage of respondents' answers to the four websites.

III. RESULTS AND DISCUSSION

The number of respondents in this study was 214, and the criteria used for selecting the respondents were individuals who have previously used all four websites, resulting in only 37 usable data for analysis. The number of participant data is reinforced by the statement of Tom Tullis in a reference book entitled Measuring Software Usability. The book states that the number of participants can be reduced to 30 during a crisis. The amount of data processed is 37, which is also as valid data. The data that was not used was invalid because the respondent did not answer completely confidentially in the questionnaire. Tables II to V are the results of calculating the validity of the four websites with the SPSS.

TABLE II. VALIDITY TEST RESULT OF ZALORA'S WEBSITE

Item	r_{count}	df (N-2)	r_{table}	V / T	V	T
1	0.779	37-2 = 35	0.2746	V	10	0
2	0.814			V		
3	0.634			V		
4	0.831			V		
5	0.731			V		
6	0.800			V		
7	0.649			V		
8	0.774			V		
9	0.647			V		
10	0.867			V		

Table II is the result of the validity test for zalora.co.id with the $r_{count} \geq r_{table}$. So, the 10 SUS statement items for zalora.co.id are declared valid and can proceed to the reliability test stage.

TABLE III. VALIDITY TEST RESULT OF BERRYBENKA'S WEBSITE

Item	r_{count}	df (N-2)	r_{table}	V / T	V	T
1	0.844	37-2 = 35	0.2746	V	10	0
2	0.791			V		

Item	r_{count}	df (N-2)	r_{table}	V / T	V	T
3	0.777			V		
4	0.875			V		
5	0.728			V		
6	0.707			V		
7	0.746			V		
8	0.785			V		
9	0.687			V		
10	0.835			V		

Table III is the result of the validity test for berrybenka.com with the $r_{count} \geq r_{table}$ So that, the 10 SUS statement items for berrybenka.com are declared valid and can proceed to the reliability test stage.

TABLE IV. VALIDITY TEST RESULT OF FASHIONTODAY'S WEBSITE

Item	r_{count}	df (N-2)	r_{table}	V / T	V	T
1	0.572			V		
2	0.721			V		
3	0.533			V		
4	0.816			V		
5	0.608	35-2 = 37	0.2746	V	10	0
6	0.753			V		
7	0.675			V		
8	0.778			V		
9	0.722			V		
10	0.841			V		

Table IV is the result of the validity test for fashiontoday.co with the $r_{count} \geq r_{table}$ So that the 10 SUS statement items for fashiontoday.co are declared valid and can proceed to the reliability test stage.

TABLE V. VALIDITY TEST RESULT OF COTTONINK'S WEBSITE

Item	r_{count}	df (N-2)	r_{table}	V / T	V	T
1	0.810			V		
2	0.805			V		
3	0.654			V		
4	0.793			V		
5	0.685			V		
6	0.837	37-2 = 35	0.2746	V	10	0
7	0.698			V		
8	0.837			V		
9	0.734			V		
10	0.826			V		

Table V is the result of the validity test for cottonink.co.id with the $r_{count} \geq r_{table}$. So that, the 10 SUS statement items for cottonink.co.id are declared valid and can proceed to the reliability test stage. Therefore. testing the validity of 10 questionnaire items from each website with 37 respondents was declared valid. The next step is to test the reliability of statements previously declared valid. This reliability test in this research to determine the level of consistency of the questionnaires that had been distributed. If reliable. the questionnaire can be relied upon to measure a research variable. The reliability test in this research used SPSS. Table VI is the result of the reliability test.

TABLE VI. RESULT OF RELIABILITY TEST

Number	Website Online Shop Fashion	*Cornbach's Alpha*	N *of Item*
1	Zalora	0.914	10
2	Berrybenka	0.925	10
3	Fashiontoday	0.884	10
4	Cottonink	0.924	10

Based on the results of validity and reliability testing, all SUS statement items used in this study are valid and reliable. So that, the questionnaire answer that has been obtained can be continued to the next testing step. The answers of 37 respondents who declared valid and reliable were then used to calculate the average SUS score on each online fashion store website. Table VII is a table of the average SUS scores of the four websites and the diagram can be seen in Fig. 5.

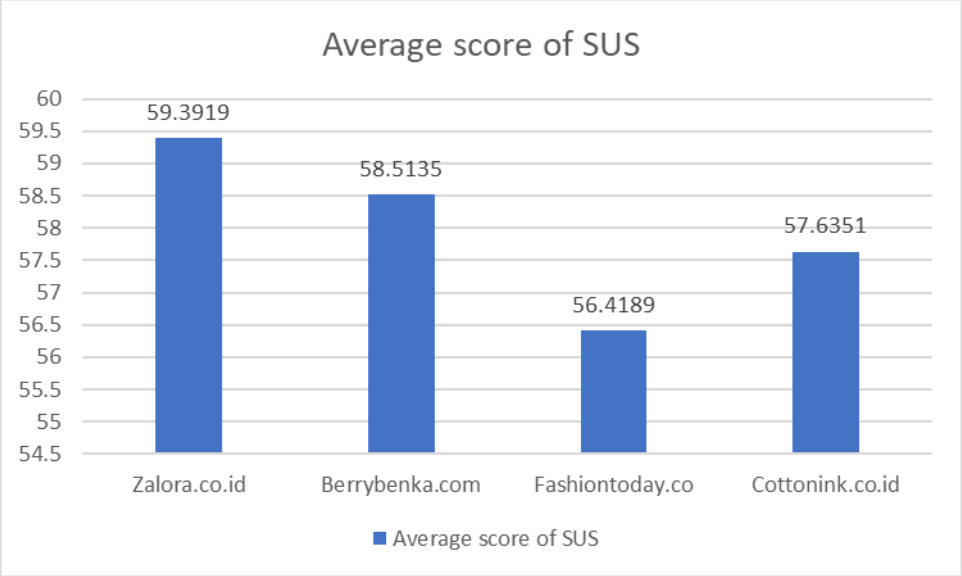

Fig. 5. Average score of SUS

TABLE VII. RECAPITULATION OF SUS SCORE

Participants	Score of SUS			
	Zalora.co.id	**Berrybenka.com**	**Fashiontoday.co**	**Cottonink.co.id**
1	67.5	72.5	50	85
2	50	52.5	42.5	50
3	75	72.5	70	67.5
4	77.5	87.5	100	92.5
5	50	55	50	55
6	67.5	67.5	55	42.5
7	82.5	75	80	72.5
8	62.5	62.5	65	55
9	50	45	47.5	50
10	87.5	62.5	40	97.5
11	62.5	62.5	80	62.5
12	55	50	47.5	55
13	77.5	80	80	82.5
14	47.5	50	50	50
15	92.5	97.5	70	95
16	47.5	52.5	52.5	52.5
17	50	50	50	50
18	47.5	55	50	45
19	65	47.5	77.5	50
20	45	50	50	50
21	50	50	50	50
22	50	50	50	50
23	50	52.5	47.5	55
24	60	62.5	57.5	52.5
25	60	60	50	50
26	40	50	60	77.5
27	47.5	50	47.5	50
28	50	50	50	50
29	47.5	50	50	50
30	42.5	42.5	45	45
31	50	50	50	50
32	72.5	70	60	32.5
33	50	50	50	50
34	55	57.5	52.5	57.5
35	90	80	50	50
36	70	37.5	52.5	50
37	52.5	55	57.5	52.5
Average score of SUS	**59.3919**	**58.5135**	**56.4189**	**57.6351**

The results of the average SUS score were used to determine the grade scale. adjectives range. acceptance. and NPS. Table VIII is the result of the analysis of the SUS grading scale.

TABLE VIII. RESULT OF GRADING SCALE

No	Website	Grade	Adjective	Acceptable	NPS
1.	Zalora.co.id	D	OK	Marginal	Detractor
2.	Berrybenka.com	D	OK	Marginal	Detractor
3.	Fashiontoday.co	D	OK	Marginal	Detractor
4.	Cottonink.co.id	D	OK	Marginal	Detractor

Although the average SUS scores of the four websites differed, the results respectively for class scale, adjective rank, acceptance range, and net promoter scores were within the same range on D, OK, marginal, and detractor scales. That meaning is the websites moderately accepted by users and the level of recommendation for using the website to others is still low. So, the website needs further improvement. Therefore, this study provides recommendations as suggestions for improvement. Recommendations are given based on the percentage results agreeing to support the negative statements on each website. Tables IX to XII are recommendation tables associated with scores on the SUS questionnaire. Table IX is the results of recommendations for Zalora's Website, Table X is the results of recommendations for Berrybenka's Website, Table XI is the results of recommendations for Fashiontoday's Website, and Table XII is the results of recommendations for Cottonink's Website.

TABLE IX. RECOMMENDATIONS FOR ZALORA'S WEBSITE

The core statement of the *System Usability Scale* (SUS)	**Problem description**	**Recommendation**
System complexity	The user is not immediately redirected when selecting the desired product and clicking the order button.	Added page view for ordering without being directed to the cart to shorten workflow
System usage guide	There is no notification if the item has been successfully added. ordered. and more. In addition. there is no guide on shopping using Zalora's website.	Provided a small notification to the user to know where he has done his work and added a how-to-shop feature in the footer section of the website
Inconsistent system	The view order and continue checkout buttons in the shopping cart feature go to the same page. They can't select items you want to continue paying for but must delete them individually.	Removed one of the buttons in the shopping cart feature

TABLE X. RECOMMENDATION FOR BERRYBENKA'S WEBSITE

The core statement of the *System Usability Scale* (SUS)	**Problem description**	**Recommendation**
System complexity	The website has no home feature to return to the main page. If the user clicks on Berrybenka in the header of the website. the user's account exists (logout)	Adding a home menu so that users don't have to return pages one by one to the main page
System usage guide	When the user wants to log in again and forgets the password. the user is redirected to the forgot password page by entering the email address. but no notification at the email address the user entered.	Enabling the SMS link for the help center. such as when the user clicks on the SMS is redirected to WhatsApp or another.
Inconsistent system	Users cannot choose the language they want to use. so users who do not understand that language need more effort to understand each of the features available.	Added a choice of language that the user wants to use in the settings menu

TABLE XI. RECOMMENDATION FOR FASHIONTODAY'S WEBSITE

The core statement of the *System Usability Scale* (SUS)	**Problem Description**	**Recommendation**
System complexity	When the user opens the website. all the menus on this website are at the bottom. and the size of the website layout is not full. The Fashiontoday website's appearance is like a mobile application's display.	Tidying up the website interface design. such as creating a menu in the header section. content in the middle. and menus such as help centers. shopping guides. and payment methods in the footer section.
System usage guide	The color components make the user try harder because the color contrast is minimal.	Provide color combinations with clearer contrast to make users more interested in using the website.

The core statement of the *System Usability Scale* (SUS)	Problem Description	Recommendation
Inconsistent system	In the category feature. there are only two categories for children. but on the main page. many types of products are offered.	Create a complete product category in the category menu.
It takes time to learn the system.	*Fashiontoday's website does not have a feature for a help center if the user has problems using the website.*	Adding a help center. such as creating an FAQ feature and providing contacts to contact

TABLE XII. RECOMMENDATION FOR COTTONINK'S WEBSITE

The core statement of the *System Usability Scale* (SUS)	Problem description	Recommendation
System complexity	Users are asked for a name. email. and password when registering. Still. after the user has successfully entered and clicked on the profile. the user is asked to re-enter the name. email. password. and other personal information so that it takes longer for the user.	Reducing form fields. such as not re-entering name. email. and password when completing personal information because it was already given when registering
System usage guide	When a user clicks on FAQ in the website's footer. they are redirected to a page that cannot be accessed because they do not have a secure connection.	Fixed the FAQ destination link so that when the user clicks. the user gets the results as needed
Inconsistent system	The website has the WhatsApp feature. but users cannot be directly connected to the contact when they click on it.	Fixed the WhatsApp contact link so users can connect automatically via WhatsApp web too.

IV. CONCLUSION

This study has tested four online fashion shop websites included in the Top Brand Award. The results for the Zalora website get an average SUS score of 59.3919. Berrybenka gets a score of 58.5135. Cottonink gets a score of 57.6351. and Fashiontoday gets the lowest score of 56.4189. Although the average SUS scores of the four websites differed. the results for class scale. adjective rank. acceptance range. and net promoter scores were within the same range on D. OK. marginal. and detractor scales meaning that the websites moderately accepted by users and the level of recommendation for using the website to others is still low. so the website needs further improvement. This is supported by the answers to the questionnaire. which conclude that many respondents have never used a website. So, improvements are needed in terms of website interface design and website marketing so that most people know and use the website. Further research is expected to obtain more respondents and incorporate additional methods to analyze user satisfaction levels by comparing expectations and reality.

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