Usability Web Analysis Using PSSUQ Method (Case Study on SME's Websites Application Fostered of Dispora Bandung Indonesia)

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Abstract---The purpose of this paper is to examine the usability of some web that have been created through collaboration between Information System Department of Widyatama University Bandung Indonesia with Dispora Bandung City Indonesia. High usability levels are usually closely related to the popularity and high utilization of the system use to help the users. Usability were measured using the Post-study System Usability Questionnaire (PSSUQ) package, a questionnaire package released by IBM consisting of 19 items of measurement instruments using Likert scale. From 19 items questionnaires can be grouped into four PSSUQ responses, that is: system usability (SYSUSE), overall satisfaction score (OVERALL), information quality (INFOQUAL) and interface quality (INTERQUAL). The results of the study show that the SMEs web application in general can be well received by the user, both on the application made, the usability of the application that can help to promote SMEs products and the quality of the interface. The results of the study indicate that there needs to be improvements related to the quality of information in the catalog of products. Some additional features are also expected by users, such as chat facilities or forum, shopping charts , and downloads. This input is expected to improve the usability of web applications.

Keywords---Usability, PSSUQ, Dispora ,Bandung, Indonesia

I. INTRODUCTION

The role of SMEs in economics of countries become important include our country Indonesia [6]. The development of SMEs to tackle poverty have good potential, because it has large contribution in absorbtion of labor, that is absorbs more than 99.45% of employee and contributes to GDP around 30%.[6]

SMEs can be developed using marketing through a website. Now increasingly diverse, innovative and creative websites in presenting various information needs and digital services for its users. But in reality, not all websites have fulfilled basic principles such as being easy to use (usable) and easily accessible (accessible). One way to find out how far a website is easy to use is with usability testing, which is "paying attention to people who try to use what you create, design, or build with the aim of making it easier to use by others or prove that your creation is easy to use "[1].

II. LITERATURE REVIEW

According to Jakob Nielsen, usability is a measure of the quality of user experience when interacting with a product or system that can be a website, software application, mobile technology, or other equipment operated by users   [4] International Organization for standardization (ISO) defines usability as the level which products can be used by certain users to achieve their goals more, efficiently , effectively and satisfactorily in the scope of their uses. [5]Web Usability is a reflection of the habits that are generally carried out by site users. [4] . Jakob Nielsen say that paying

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attention to usability is very important so that a site can survive. Sites that have high usability have a huge opportunity to be frequented by internet users. Usually users want to get information quickly and expected. If a site fails to show clearly what can be done with the site, users tend to leave the site immediately and switch to another site. [4]

Measuring usability is how our system / product can accomplish user tasks properly. According to ISO 9421-11, good usability standards are efficient, effective, and satisfaction. It is clear when a user to be able to carry out effectively that refers to results, efficient which refers to the method, and satisfaction that refers to satisfaction.
Here are general measures that can be used as a benchmark in measuring usability characteristics, that is [4]:
a. Learnability, is the level of ease of users to fulfill basic tasks when they first see / use the design results.
b. Efficiency is the level of speed of users in completing tasks after they learn the results of the design.
c. Memorability is the level of ease of the user in using the design properly, after a while not using it.
d. Errors are the number of errors made by the user, the level of annoyance with errors and how to correct errors
e. Satisfaction is the level of user satisfaction in using the design.

II.I. Usability Measurement
Usability is measured using the PSSUQ method (Post-study System Usability Questionnaire)PSSUQ is a questionnaire package released by IBM consisting of 19 items of measurement instruments intended to assess the five systems of usability characteristics. [3]
The following is a complete PSSUQ (Post-Study System Usability Questionnaire) questionnaire package.
1. In general, I feel satisfied with how easy in using this system
2. I find it easy when using this system
3. With this system I can complete tasks and scenarios effectively
4. With this system I can complete tasks and scenarios quickly.
5. With this system I can complete tasks and scenarios efficiently.
6. I feel comfortable when using this system
7. I find it easy when learning to use this system
8. By using this system I become more productive
9. The system gives an error message clearly and tells me how to fix problems that arise
10. When I make a mistake using the system, I can quickly and easily recovery.
11. Information provided by the system such as online help, on-screen messages, and other documentation is clear
12. Information that I need easily I get
13. The information provided is easy to understand
14. The system provides effective information so that it helps me complete tasks and scenarios
15. Organization of information on the screen is clearly displayed
16. The system interface is pleasant
17. I like using this system interface
18. This system has all the functions and abilities that I expect
19. Overall, I am satisfied with this system
The 19 questioner items were grouped into four PSSUQ responses, that is: Overall satisfaction score (OVERALL), system usability (SYSUSE), information quality (INFOQUAL) and interface quality (INTERQUAL) [3].
The following is a table of rules for calculating the PSSUQ score [1].

Table 1:*PSSUQ Score Calculation Rules*

Score Name	Average Response Item
Overall	Item no 1 to 19
Sysuse	Item no 1 to 8
Infoqual	Item no 9 to 15
Interqual	Item no 16 to 18

Source: Fruhling, A and Lee, S, 2005. Assessing the Reliability, Validity and Adaptability of PSSUQ. In Proceedings of the 9th Americas Conference on Information Systems, Omaha, Nebraska, USA, August 2005,

To measure the level of user approval for questionnaire items, a seven-point score form was used with a Likert scale model.The measurement results are then processed by descriptive statistical methods and do analysis of each parameters or overall parameters is carried out.

III. FINDINGS

Usability research on web applications starts with determining respondents. Currently the Information Systems departement has successfully made 100 web applications. From the total number of webs, around 25% were chosen as respondents, that is 25 respondents. Each respondent was asked to fill out a questionnaire built on the PPSUQ questionnaire package, such as the example in table 2.

Table 2:_Example of the PPSUQ Questionnaire Information._

No	Statement	Disagree / Agree	
			NA
1	In general, I feel satisfied with how easy in using this system		
2	I find it easy when using this system		
3	With this system I can complete tasks and scenarios effectively		
4	With this system I can complete tasks and scenarios quickly.		
5	With this system I can complete tasks and scenarios efficiently		
	….		
9	The system gave error messages that clearly told me how to fix problems		
10	When I make a mistake using the system, I can quickly and easily recovery		
11	Information provided by the system such as online help, on-screen messages, and other documentation is clear		
13	The information provided is easy to understand		
19	Overall, I am satisfied with this system		

Fill in each of the following statements with your level of agreement with the contents of the statement. A small score indicates a high level of disagreement, while a large score states a high level of agreement.

Furthermore, each statement is calculated the score and quetioner is grouped into four to be able to calculate the PSSUQ response, that is: Overall satisfaction score (OVERALL), system usability (SYSUSE), information quality (INFOQUAL) and interface quality (INTERQUAL).

Table 3:_Average Value Per Type of PSSUQ_

Number Responden	Type of PSSUQ Response			
	Overall	Sysuse	Infoqual	Interqual
1	3.5	4,5	3.14	2,33
2	2,3	2,1	2,1	3.33
3	4	4,8	3.1	4
4	1,15	1	1	1
5	3,7	4	2,71	4,67
6	5,6	5,5	5,43	6
7	3,45	3,5	2,43	4,33
8	4,15	4,88	2,43	5
9	4,95	5	3,71	6
10	1,45	1	1	1
11	1,5	1	1	1
12	3,25	3	2,14	3,67
13	3,15	2,63	2,43	3,33
14	3,63	4,5	3,14	2,33

15	2,32	2,13	2,14	3,33
16	4	4,75	3,14	3,33
17	1	1	1	1
18	3,63	4	2,71	4,67
19	5,6	5,5	5,4	6
20	3,26	3,5	2,43	4,33
21	3,95	4,88	2,43	5
22	4,74	5	3,71	6
23	1	1	1	1
24	1	1	1	1
25	2,79	3	2,14	3,67
Average	3,16	3,33	2,52	3,52

From the results of data processing, it can be seen that the average respondent (68%) shows a high level of agreement with statements relating to satisfaction with the web application that has been made (3,16 for overall).

For the benefit of the application (sysuse), the average respondent (56%) showed a fairly high level of approval (3,33), it indicating the usefulness of web applications can help them to promote their products. But there were 44% of respondents disagreeing with the benefits of the application, it caused by their application that not many contain the product images and web design were not good enough, too simple, and found confusing naming, so the respondents did not feel comfortable with the application and finally did not believe too much if web applications can help them improve promotion.

For the relation of information quality (infogual) only 36% of respondents showed a high level of agreement (2,52). This is due to the fact that there are many cases of incomplete web applications that provide information about the product catalog, such as the price and size of the product, making it difficult for prospective buyers to buy the product. There are web applications that only display images without any information about the product. The encoding of the product is also a lot that does not include it, so its confusing buyers who are interested in buying the product. In addition, typing errors and the use of word abbreviations are found so that the information becomes less clear.

In relation to interface quality (Intergual) 68% of respondents indicated a fairly high level of agreement (3,52) with the interface created. This is caused by the majority of the interface of the web application that is made quite well, the design is attractive so that it attracts visitors to explore the web even further.

There are some inputs that were also delivered by respondents through a questionnaire, while the summary is listed in the table below.

Table 4:*User input for application development*

No	Input / Feature Development	% Respondent
1	Shooping chart facility	40%
2	Chat or forum facility	40%
3	Download facility	30%
3	Improve product catalog facilities to be more complete, displaying product information such as price, product code, size and usability.	50%

IV. CONCLUSION

Based on the results of the research usability measurement of the web application using the PSSUQ questionnaire package, it can be concluded as follows:

1. The results of the questionnaire are sufficiently processed using simple descriptive statistics such as observing the average value of each parameter.
2. The usability measurement results of MSMEs web that fostered of Dispora Bandung City using the PSSUQ questionnaire package indicate that generally can be well received by the users, both on the applications made, the usebility of applications that can help to promote MSMEs products and the quality of interfaces. There needs to be improvements related to the quality of information in the product catalog.
3. The results of usability assessment can also be used to provide input on the priority of application development in the future.

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