

Usability Analysis of Higher Education Information Systems (SIDIKTI) at Sjakhyakirti University Using Post-Study System Usability Questionnaire (PSSUQ)

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Abstract— The Higher Education Information System (SIDIKTI) is a existing systems at Sjakhyakirti University which is used as a basis for the needs of the academic community to make it easier for operators, students and lecturers to control teaching schedules, take courses, view classrooms, and print semester study results. The system created needs to be investigated for its usability level. A high level of usability is usually closely related to the popularity and high utilization of the system by users. This study aims to analyze the Usability of SIDIKTI at Sjakhyakirti University using the Post-Study System Usability Questionnaire (PSSUQ). by having four response items, namely 2.504 overall, 2.502 sysuse, 2.509 infoqual and 2.59 intqual. From the results that have been obtained that SIDIKTI as a whole is good, and in terms of usability SIDIKTI is easy and convenient to use so that users become more productive, effective, efficient in using the system and the quality of SIDIKTI information can be well received by users, so it helps in completing work. This shows because PSSUQ has the principle of lower score high usability, where if the score obtained is smaller, the usability will be greater.

Keywords: Analysis and Post - Study System Usability Questionnaire (PSSUQ).

I. INTRODUCTION

Usability is defined as the process of optimizing the interaction between the user and the system that can be done interactively, so that users get the right information. In order for a system to be effective, efficient, and able to provide satisfaction to users, the system must be able to provide opportunities for users to complete their activities on the system as well as possible (ISO/IEC, 1998). This research was conducted to analyze the usability aspect, namely the process of optimizing the interaction between the user and the system. through these interactions users can obtain appropriate information as a better solution. According

to Nielsen (1994), usability is an important requirement so that a system or application can survive in the long term, so that it can make it easier for users to operate the system, easy to understand the system, run according to the purpose of the system, and will easily attract the interest of interested users. impact on the success of the system. A system is said to be successful if it can be accepted by its users.

In general, usability analysis is carried out through a series of questionnaires. Several types of questionnaires can be used in Usability, including: System Usability Scale (SUS) which is offered commercially in the form of a questionnaire package, Post - Study System Usability Questionnaire (PSSUQ) is a questionnaire package released by IBM which consists of 19 statement items, WAMMI and SUPR-Q to measure the website, Single Ease Question (SEQ) which consists of one short question, Usefulness, Satisfaction, and Ease Of Use (USE), and several other questionnaire packages. PSSUQ is a questionnaire package used in usability which consists of 19 statement items aimed at assessing usability using a Likert scale based on a 7-point scale. The use of the Higher Education Information System (SIDIKTI) of Sjakhyakirti University can support academic information services that are useful for institutions in controlling university academics. SIDIKTI as one example of the use of technology, it will change several aspects including social and work aspects in a large enough quantity. The SIDIKTI management will be more efficient with the technology that makes it easier to work in managing student and lecturer data. Sjakhyakirti University has been using SIDIKTI since 2016 which was created by Lis Pradesan, S.Kom., M.TI and has been used until now. The reason the author conducted research on Usability SIDIKTI is to facilitate the development of the system to be carried out. This system is also one of the sub-systems for supporting the activities of the academic community so as to assist users in using SIDIKTI Sjakhyakirti University.

One of the existing problems is that there are still some students and lecturers who still do not understand the use of SIDIKTI, therefore some students and lecturers are still asking for help from the operator and asking what are the functions of the display on the

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SIDIKTI. This condition makes operators feel overwhelmed if several users ask the same thing repeatedly.

Based on the above background, the authors conducted a study entitled Usability Analysis SIDIKTI Sjakhyakirti University using PSSUQ.

II. LITERATURE STUDY

2.1 Usability

Usability is the key to making the system easy to learn and easy to use (Nielsen and Mack, 1994). Usability includes consistency and ease of use of users using web-based sites, ease of reading information, organizing information, and speed of completing work systematically (Fruhling & Lee, 2005).

From the literature it can be concluded that usability is a measure where the system can be used easily to learn, easy to remember, efficient, satisfactory and the lack of errors occurs so that it can be used properly and can achieve user goals.

2.2 Post – Study System Usability Questionnaire (PSSUQ)

Post – Study System Usability Questionnaire (PSSUQ) or better known as the Post-Study System Usability Questionnaire is a questionnaire package used in usability (Lewis, 2002). A follow-up study on the PSSUQ using data generated similar psychometric properties between the original survey and the follow-up study survey (Lewis, 2002). PSSUQ is used to assess the satisfaction of the system used by the user. The PSSUQ consists of 19 statement items aimed at assessing four usability scores (Mustikaningtyas et al., 2016).

Based on the factor analysis of Lewis (2002), the rules developed to calculate the scale score for PSSUQ are: Overall satisfaction score (OVERALL), System Usability (SYSUSE), Information quality (INFOQUAL), Interface quality (INTQUAL).

1. Overall satisfaction score (OVERALL), Calculates the average response for statement items 1 to 19.
2. System usability score (SYSUSE), Calculates the average of responses for statement items 1 to 8.
3. System quality score (INFOQUAL), Calculates the average of responses for statement items 9 to 15.
4. Interface quality score (INTQUAL), Calculates the average of responses for statement items 16 to 18.

So PSSUQ is a questionnaire package that is used to analyze aspects of Usability (optimization process of interaction between users and the system), the existence of these interactions can allow users to obtain appropriate information as a better solution.

III. RESEARCH METODOLOGY

3.1 Method

The research method in this study is a quantitative approach. According to Sugiyono (2015) the quantitative approach is a process of finding knowledge that uses data in the form of numbers as a tool to find information about what we want to know. Quantitative methods are used for research on large populations and very large samples, so survey research designs are used, researchers use survey design research with the aim of knowing the characteristics or classifying levels in the population or sample, and researchers will also evaluate a program that will be run.

This research is quantitative because the research results are in the form of numbers that are reality, meaning that it is seen as something concrete that can be observed, does not change, can be measured and verified and then described or described according to the results of each perspective. The quantitative approach is a process of finding knowledge that uses data in the form of numbers as a means of determining information about what we want to know (Thoifah, 2016).

3.2 Population and Sample

The population used in the study were Operators, Students, and Lecturers:

Table 3.1 Population Data of Sjakhyakirti University

No	Population	Number
1	Operators	4
2	Lectures	99
3	Students	2.480
Total Population		2.583

Sampling was carried out using simple random sampling because simple random sampling was said to be simple where sample members from the population were taken randomly without regard to the existing strata in the population (Sugiyono, 2016). In this study, a study will be conducted to determine the usability of SIDIKTI according to user perceptions. In accordance with this study, which took a sample with a population of 2,583 people consisting of students, lecturers, and operators.

Based on calculations using the Slovin formula, the sample obtained as many as 344 samples of respondents which include users from SIDIKTI Sjakhyakirti University.

3.3 Research Variable

In accordance with the problem and research objectives, the variables of this research consist of variables. Variables can be seen in Table 3.2 below:

Table 3.1 Research Variable

Variable	Item PSSUQ
<i>Overall</i>	No item 1 s/d 19
<i>SysUse</i>	No item 1 s/d 8
<i>InfoQual</i>	No item 9 s/d 15
<i>InterQual</i>	No item 16 s/d 18

3.4 Measurement Scale

The scale that is often used in the preparation of the PSSUQ questionnaire is the ordinal scale or often called the Likert scale, which contains seven levels of answers with the following choices:

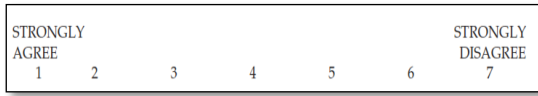


Figure 3.1 Likert Scale Presentation

A related analysis (Lewis, 1995) shows that the 7-point average difference is more strongly correlated than the 5-point mean difference because there may be times when the practitioner will be interested.

On item-level comparisons rather than scale-level comparisons, the current version of PSSUQ uses a 7-point scale instead of a 5-point scale.

The formula for calculating the average of the subscales can be done using the following formula:

$$Subscale = \frac{\text{the number of respondents' assessment scores from each sub-scale}}{\text{the number of question item numbers for each sub scale}} \quad (1)$$

3.5 Research Stages

The research stage is a conceptual model of how theory relates to factors that have been identified as important problems (Sugiyono, 2014). In Figure 3.2 below are the stages that will be carried out in the research.

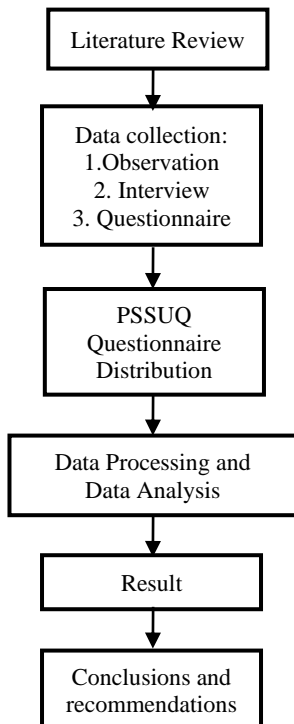


Figure 3.2 Research Stages

IV. RESULT AND DISCUSSION

4.1 PSSUQ Subscale Recapitulation Results

The result of PSSUQ Sub Scale is shown in Table 3.3 below:

Table 3.3 PSSUQ Subscale Recapitulation Results

Respondent	PSSUQ Sub Scale Type			
	Overall	System Usability	Information Quality	Interface Quality
1	2,052631579	1,875	2,28571429	2,333333333
2	1,631578947	1,875	1,57142857	1
3	1,368421053	1,75	1,14285714	1
4	1,684210526	1,625	1,71428571	2
5	2	2,25	1,71428571	2
6	3,789473684	2,75	4,42857143	5
7	2,052631579	1,875	2	2,666666667
8	2,263157895	1,625	2,71428571	2,666666667
9	1	1	1	1
10	2,105263158	2,125	2	2,333333333
11	7	7	7	7
12	1,315789474	1,375	1,28571429	1,333333333
13	2,263157895	2	2,28571429	2,666666667
14	3	3	3	3
15	1,578947368	1,75	1,42857143	1,666666667
16	1,263157895	1,375	1	1,333333333
17	1,052631579	1	1,14285714	1
18	6,263157895	6,25	7	4,333333333
19	2	1,875	1,85714286	2,666666667
...
340	2	2,125	1,71428571	2,333333333
341	2	1,75	2,28571429	2,333333333
342	2,210526316	2,5	2	2
343	1,894736842	2	2	1,666666667
344	1,842105263	1,875	2	1,666666667
Average	2,504895961	2,50290698	2,5095515	2,593023256

4.2 Discussion

In the above variables, usability is measured using PSSUQ which has 4 response items, namely overall, system, infoqual, intqual.

Overall is an assessment of the entire PSSUQ questionnaire which shows overall user satisfaction - the average overall assessment results get a value of 2,504 which indicates the level of approval of the user's overall satisfaction with SIDIKTI.

System Usability is an item contained in the PSSUQ assessment to assess the usefulness of SIDIKTI whether it is in accordance with the needs of the user. The average score for the System Usability assessment is 2,502.

Informant Quality is an item contained in the PSSUQ assessment to assess the quality of SIDIKTI information in terms of ease, accuracy, suitability with needs, and accuracy in presenting information. The

average score for the Information Quality assessment is 2,509.

Interface Quality is an item contained in the PSSUQ to provide an assessment of the quality of the SIDIKTI interface in the form of an attractive appearance and ease of operation. The average score for the Interface Quality assessment is 2.593.

After the usability assessment was carried out, the overall PSSUQ value obtained was 2,504. This shows that the overall use of SIDIKTI is good. According to Rochman (2018) "in the PSSUQ questionnaire it can be said to be good because it has the principle of lower score high usability, where if the score obtained is smaller, the usability is greater.

V. CONCLUSION AND RECOMMENDATION

The usability analysis at SIDIKTI Sjakhyakirti University conducted using the Post-Study System Usability Questionnaire (PSSUQ) has provided a comprehensive picture of SIDIKTI in terms of usability. In determining the results of usability calculations, there are four variables, namely overall, system usability, information quality and interface quality. The overall sub-scale has a value of 2,504, System usability has a value of 2,502, Information quality has a value of 2,509. And the interface quality has a value of 2,593. From the results that have been obtained that SIDIKTI as a whole is good, and in terms of usability SIDIKTI is easy and convenient to use so that users become more productive, effective, efficient in using the system and the quality of SIDIKTI information can be well received by users, so that it helps in completing work.

Based on the results of research that has been carried out and have drawn conclusions, there are several suggestions that are expected to be useful for further research, namely: There needs to be an improvement from the recommendations of SIDIKTI users in terms of the appearance on SIDIKTI to make it more attractive so that it can increase the usability value of SIDIKTI. Further research can use other types of questionnaires, namely: System Usability Scale (SUS) which is offered commercially in the form of a questionnaire package, WAMMI and SUPR-Q to measure the website, Single Ease Question (SEQ) which consists of one short question, Usefulness, Satisfaction, and Ease of Use (USE), PSSUQ provides assessment indicators that are more specific than other questionnaires used to assess user satisfaction so that some questions are more accurate and on target.

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