



Usability Analysis to Measuring Effectiveness of Online Final Project System

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Abstract. Final Project is one of the academic stages that must be passed by students to obtain a degree. In the era of the Covid-19 pandemic, the stages to achieving this degree must be done online by students. To accommodate this, we need a system that can bridge so that the final project stages can run even online. The system is an online final project system that was built to match the flow of the final project needs of each university. In the system there are stages of guidance, scheduling, conducting assessments, and uploading revised results. From all these stages, evaluation and assessment are needed so that the online final project system can be developed easily. The evaluation and assessment method used is usability, because usability techniques can find out the shortcomings of the system directly from the user. Using the Software Usability System (SUS) questionnaire which involved 58 respondents at State Islamic University of Maulana Malik Ibrahim Malang, resulted in an average score of 78.92. Based on the results of the average score of the SUS questionnaire on the online final project system which resulted in 78.92, the online final project system has a good usability level.

Keywords: Final Project · usability · SUS · questionnaire · respondents

1 Introduction

Technology is evolving quite quickly right now, and it plays a big part in helping people use their time more efficiently. Information systems are one type of technology that supports human endeavors. An information system within an organization supports operations, serves as a managerial and strategic tool for an organization or agency's actions, and generates reports for certain parties. [1]. Information systems have been implemented in various agencies or institutions, including government [2], banking [3], hospitals [4, 5] and universities [6, 7]. Especially for universities such as universities, information systems are needed to improve the quality of services for the educational process. According to [8], to enable students the freedom to discuss contentious topics, share ideas, ask questions, and provide feedback without being constrained by time or place, collaborative learning must be established in the field of education. An academic information system, for instance, comprises numerous operations, from planning lectures to writing theses.

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The term “thesis” is used in Indonesia to describe a scientific work that explains the findings of undergraduate study and examines a problem or occurrence in a certain scientific subject following appropriate rules. The thesis seeks to write and compose a scientific work in accordance with their field of study. Students that are able to write a thesis are said to be able to integrate their knowledge and abilities in order to comprehend, analyze, describe, and explain issues in the scientific topic they are studying [9].

In the Department of Informatics Engineering, Faculty of Science and Technology, State Islamic University of Maulana Malik Ibrahim Malang, students who want to submit a thesis proposal must look for information on existing thesis, especially a theory that discusses problems similar to the issues that students who wish to submit an idea want to raise. Then, students whose thesis proposal is approved by the Prospective Thesis Supervisor and Head of Study Program can start the thesis process. Students have to go through many stages in the thesis process, including pre-proposal, proposal seminar, comprehensive exam, result seminar exam, and thesis exam. Students must pass all these stages at the Department of Informatics Engineering, Faculty of Science and Technology, State Islamic University of Maulana Malik Ibrahim Malang, to achieve a Bachelor of Computer Science [10]. In the process, each stage is carried out face-to-face with the department managers, supervisors, and examiners. During the 2020 Covid-19 pandemic, the leadership of the State Islamic University of Maulana Malik Ibrahim Malang through the Circular of the Chancellor of State Islamic University of Maulana Malik Ibrahim Malang No. 1171 of 2020 concerning Preparedness and Anticipatory Measures for the Prevention of Corona Virus Infection (Covid-19) in the State Islamic University of Maulana Malik Ibrahim Malang environment takes a policy to prevent/break the chain of transmission by carrying out academic activities online [11].

The stages of the thesis at the Informatics Engineering Department of State Islamic University of Maulana Malik Ibrahim Malang during the covid-19 pandemic have followed the policy of the university leadership in that it is held online. Many applications that can be used to complete the stages of the thesis include Google Docs, Google Form, WordPress Form Plugin, Zoom, G-meet, and the like. However, the use of the application is less flexible because each application is used for different purposes, including pre-proposal thesis registration, seminar proposal registration, comprehensive examination registration, results in seminar registration, thesis examination registration, scheduling seminars, and thesis exams, assessment, and recording revisions. So that with this unintegrated system results in inefficient performance, and a lot of time is needed to manage these data at the departmental management level.

Therefore, it is necessary to take alternative solutions to deal with these problems by designing and implementing an online final project (**e-thesis.id**). In his study, Kaddoura et al. expressed that the online exam system is very popular after the COVID-19 pandemic as it should keep up with digitization and globalization [12]. By applying these alternative solutions, it is hoped that all stages of the face-to-face thesis process can be reduced by intermediary online thesis systems that are built. Thus, this system is expected to provide convenience both at the departmental management level, lecturers as supervisors and examiners, and students as implementers in completing the thesis stage. Thus, the implementation of the thesis as an academic process can run well even during the current Covid-19 pandemic.

The online thesis system needs to be evaluated to determine the level of effectiveness and efficiency of the system. According to [13] to measure usability means to measure effectiveness, efficiency, and user satisfaction, for that it can be done in two ways, namely relying on the assumption that the program maker/myself can use usability metrics.

One way that can be used is to measure the effectiveness and efficiency of e-thesis. It is by using a usability test. This usability test uses the System Usability Testing (SUS) method, “which gives adequate results based on the consideration of a small sample size, time and cost, the results of the SUS calculation will be converted into a value” [14]. Usability comes from the word usable, which generally means it can be used properly [13]. Furthermore, usability.gov explains that usability refers to the quality of user experience when interacting with products or systems, such as websites, software, devices, or applications. Meanwhile, the definition of usability, according to the International Standards Organization (ISO) 9241-11 [15], is the extent to which a product can be used by certain users for certain purposes effectively, efficiently, and satisfactorily in the context of certain users. Usability can be used as an evaluation medium. When a product is the focus of concern, these measures provide information about the usability of that product in the particular context of use provided by the rest of the work system [16]. The results of this usability test are expected to be able to improve the quality of e-thesis. Id to make it more developed and useful for those in need.

2 Method

The descriptive approach of research was employed in this study. A descriptive technique is a type of research that aims to describe already-occurring phenomena, both natural and artificial [17].

The instrument used to collect data is to use a questionnaire that is used to determine a usability value. Usability is the intersection of 3 things, namely effectiveness, efficiency, and user satisfaction in the context of use [17]. So, to test the usability of a system it also tests the effectiveness, efficiency, and satisfaction of the system itself. Usability.gov explains that the questionnaire used to measure usability is called the Software Usability System (SUS) questionnaire [18].

Users can utilize the SUS (System Usability Scale), a general evaluation tool. The SUS (System Usability Scale) score might indicate user acceptability, and it must be greater than 70 points to fall under the Good or Acceptable category [19]. A SUS (System Usability Scale) score of 90 is required to receive an A [20]. On the other hand, the SUS (System Usability Scale) score increased to a value over 70.4 when considering the adjectives that were assessed as good [21]. 55 respondents gave a SUS (System Usability Scale) score of 72. The user acceptance category acceptance range, the value scale, and the assessment in accordance with the rules in Figure are all steps in the process of getting the evaluation Fig. 1 [19].

Ten statements make up the SUS questionnaire’s content, to which responders must choose one of five options on a Likert scale. The SUS questionnaire’s advantages include managing respondents because of the scale’s simplicity of use, but it may also be used with fewer respondents and still produce valid and trustworthy findings. Table 1 displays the SUS questionnaire that has been customized for the requirements of this study.

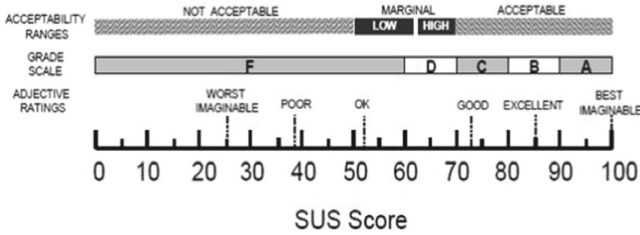


Fig. 1. The System Usability Scale (SUS Score) [21]

Table 1. Standard Sus Questionnaire [18]

No.	Question	1	2	3	4	5
1.	I realized I wanted to use this system					
2.	The use of this e-thesis is complicated					
3.	I think the system is easy to use					
4.	I feel I will need help from a technical person to be able to use this system					
5.	I find the various functions in the system well integrated					
6.	I think there is too much inconsistency in this system					
7.	I imagine that most people will learn to use this system very quickly					
8.	I find that e-thesis.id is very complicated to use					
9.	I feel very confident using this system					
10.	I need to learn many things before I can use this system					

3 Result and Discussion

The results of the indicated values are acquired and are shown in Fig. 1 following the distribution of the SUS questionnaire to e-thesis.id users.

Students and teachers at State Islamic University of Maulana Malik Ibrahim Malang received questionnaires, among other groups. The findings of the values were acquired by distributing the SUS questionnaire to professors and students at State Islamic University of Maulana Malik Ibrahim Malang, as shown in Fig. 2. Figure 2 shows the data obtained from the SUS questionnaire respondents. The scores for each respondent were then calculated using Brooke’s method [19].

Figure 3 displays the outcomes of each respondent’s scores. Figure 3 shows that the SUS questionnaire’s average score is above 70, indicating that the usability system is above average (good). The procedures of the SUS questionnaire analysis that have been previously mentioned will subsequently be used to analyze the score of the questionnaire responses. The value of user satisfaction with e-thesis. Id is then determined using the findings of the analysis of the SUS questionnaire scores for each user facet. The evaluation of user satisfaction with e-thesis. id based on 58 users from Maulana Malik Ibrahim State Islamic University.

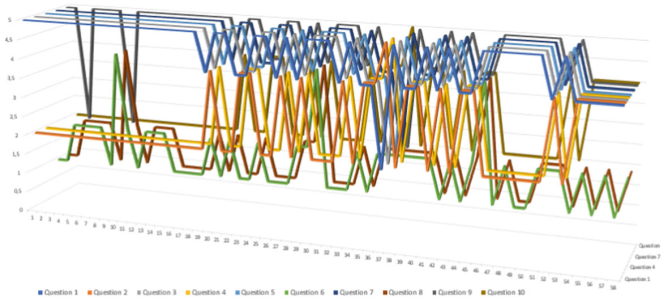


Fig. 2. Data on The Result of Obtaining Respondents for the Software Usability System (SUS) Questionnaire

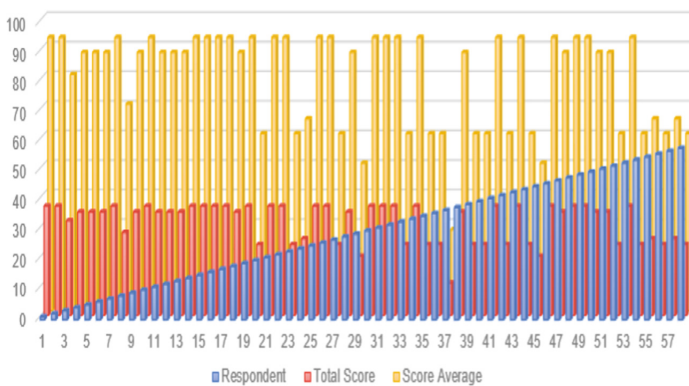


Fig. 3. Average Usability Score of Respondents

The value of user satisfaction with e-thesis. id is displayed in Fig. 3. The graph demonstrates the importance of user pleasure with e-thesis.id is good. Based on the analysis that has been carried out on each statement item from the SUS questionnaire, the good value of the level of user satisfaction with e-thesis.id is caused by several things, namely (1) respondents feel it is easy to carry out the stages of the thesis process (thesis) (2) respondents feel that the UI UX of e-thesis.id is quite easy to understand and understand (3) respondents are still not familiar with e-thesis.id, so they are still confused about the location of buttons or menus (4) lack of socialization so many respondents feel this is something that new and need adaptation with e-thesis.id.

Figure 3 demonstrates that all respondents' overall satisfaction with e-thesis.id is 78.92 percent on average. These results indicate that respondents assess e-thesis.id as a whole with good results in using e-thesis.id.

4 Conclusion

Testing online final project system (e-thesis.id) using the Software Usability System (SUS) with a questionnaire model as many as 58 respondents in the State Islamic University of Maulana Malik Ibrahim Malang, resulting in an average score of 78.92. So

with a score of 78.92, it can be declared good based on the respondents in using online final project system (e-thesis.id).

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Authors' Contributions. Agung Teguh Wibowo Almais designed the model and the computational framework and analysed the data. Agung Teguh Wibowo Almais and Wahyu Hariyanto carried out the implementation. Ririen Kusumawati performed the calculations. Agung Teguh Wibowo Almais and Ririen Kusumawati wrote the manuscript with input from all authors. The study was designed by Agung Teguh Wibowo Almais and Wahyu Hariyanto, who were also in charge of its overall planning and direction.

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