First time user experience of academic information system: An evaluation of usability

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Abstract. The use of information technology continues to grow, one of which is software development. The software does not only focus on functionality, but the ease of use becomes a heuristic development. The interface design cannot be underestimated because the wrong interface design can also result in repeated software development from an initial stage. Software development from the start is certainly not easy and time-consuming to revise it. The specific purpose of this study is to adapt various models of usability testing instruments to measure how easy it is to use the system being tested. This research aims to help the designer evaluate what he has designed. The first stage is the validation of the first user experience instrument of the Academic Information System Universitas Muhammadiyah Magelang. The results of this study found that the KRS system was able to be well received by the first user.

1. Introduction

The software has become a big phenomenon with millions of developers. The pioneer of major software manufacturers is Microsoft. The software development competition is very fast and dynamic to attract users with easy services [1]. Good services in software today must pay attention to the flexible and easily controlled interface [2-5]. So that software development in Indonesia has now begun to focus on Usability. This is indicated by the existence of a job position called UI / UX Designer.

The study of Usability, or what is often called Usability, is an important factor for determining a quality user experience [6, 7]. Usability is a broad part of the branch of Human-Computer Interaction, which involves various branches of science. This knowledge is related to observing human behaviour. Usability is still something important in the development of technology that focuses on user aspects, not on technological aspects, so that the development is in a user-centered design, which is now more commonly referred to as User Experience.

IBM has developed and specifically studied Usability through James R Lewis. IBM developed the usability measurement method by referring to psychometric methods that will measure the quality of a user's psychological size [2]. Lewis is conducting structured research that will take respondents from stage one to the next stage. Starting from the visit to the Laboratory stage to be briefed and a quick look at the equipment and systems to be tested, getting a demonstration of system usage, basic training in using the system, until finally, if they have finished carrying out all the stages, then fill out the questionnaire provided. This filled questionnaire uses a 7 Likert scale.
The research conducted by Brooke developed a Usability measurement tool called SUS (System Usability Scale), which was used to evaluate Usability quickly [4]. The development of SUS has been started since 1986, proving that Usability has a very important role in determining the success of a system in the relationship between humans and computers. Failure at the time of system design, namely at the interface design stage, will certainly make regrets at the end because the development continues to progress towards the implementation of design even to the testing stage. Usability evaluations avoid failure system implementation. It carried out at the stages between interface design and coding implementation. If we read the retrospective of usability Brooke researchers, we will see that the preparation of measuring instruments and their implementation requires observations from all fields. When Brooke developed SUS, it was costly to install cameras on all sides to observe user behaviour. Towards the system that was made from view to monitors, keyboards, and their body movements [4].

Usability Rating is measured by Kortum to find out from the 1000 respondents involved in this study how helpful and easy it is for 14 computer applications that are used daily [8]. Using Usability measuring instruments with 14 questions that have been adapted questionnaires, managed to get an average value of 80.2 out of 100. The highest value still belongs to Google Searching, with a value of 93.4. Moreover, the lowest value is the Excel application that has a value of 56.5. This difference that is too far away is a common phenomenon because Excel has more complex features than Google Search, which also has minimal interaction. This research hopes to become a reference for uniform application development.

In Lewis's latest study, Usability evaluation used three types of usability System Usability Scale (SUS), Usability Metric for User Experience (UMUX), and Computer System Usability Questionnaire (CSUQ) measurement tools to measure four commonly used applications, Excel, Word, Amazon, and Gmail (Lewis, 2018). Research on usability evaluation of information or profiles from an educational institution at the Muhammadiyah University of Magelang was carried out in a study conducted by [9] with the URL address http://ummgl.ac.id. Setiawan has evaluated http://ummgl.ac.id by 95 respondents with a score of 2.77 on a scale of 4, which has a conclusion in the Good category. Based on several previous studies of Usability, the development of measuring instruments with experiments on several objects to be measured has different characteristics. Usability evaluation was also conducted on games software conducted by Barnett, examining the first experience of the respondents playing the games "Super Mario Run" and "Linia" [10]. Barnett argues that the first experience affects Usability in aspects of information quality, but does not significantly influence Usability in its entirety in the game. Barnett's explanation is that games will be satisfied with the game rather than its functionality [11]. Based on Barnett's statement, the researchers tried to conduct usability evaluations for the first time users to measure their experience in using the academic information system of Muhammadiyah Magelang University on the URL http://krs.ummgl.ac.id.

Previous research has been applied to measure the user's first experience playing the game. So the focus of his research is on resolving challenges that have levels. If on a system other than games, of course, the challenge is to complete an administration as an obligation, so that any interaction that is carried out must be done without knowing the level or game over.

The purpose of this study was to measure the perceptions of first-time users using the KRS system. One's first experience using the system is certainly an important input for system developers to design systems that are easy to learn, use, and handle errors that are easily recovered.

2. Method
The research method used by researchers is the method of observation and interviews (Figure 1). Respondents, in this case, are UMMgl Students as users who have used the Academic Information System (krs.ummgl.ac.id) for the first time. A questionnaire compiled with a list of questions based on usability aspects refers to several instruments that have been developed by experts [3, 4, 6].
Figure 1. Research sequence

The stages of this study begin with observing the system used by respondents, namely KRS. Respondents are UM Magelang’s students as the first users of the KRS system. Students use the system for the first time to enter a choice of second semester courses. At the beginning of the first semester, students are inputted by the academic department for the default course. The second stage is data collection. Data collection is done by interview. The interview method was chosen because of that more flexible to explain questions to the respondents. The third stage is data validation. Data validation is done to ensure that the data is correct and in accordance with the facts. The fourth stage is data analysis. Data analysis is done using a simple method of calculating basic statistics. The data is analyzed based on the average results of the respondents’ answers. The analysis examines the anomalies of the system measurement results. The last stage is reporting. Reporting of measurement results using ranking 1 to 7, with a smaller ranking, means better value. This ranking of 1 to 7 has a neutral point, which is at value 4, which is in the middle rank. 1 means strongly agree, and 7 strongly disagrees.

3. Result and discussion
The results of this study are measurements of 76 respondents who can take interviews. But before that, the validation test of the questionnaire used was all declared valid and reliable using SPSS, as shown in the following Figure 2. Respondents freely give grades without any pressure. Here is an answer to the eleven questions that have been asked.

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|--------------------------------------------|------------|
| .779             | .786                                       | 11         |

Figure 2. Reliability testing

Figure 3 for Q1 Rank shows that the majority of respondents gave a response to agree by giving a value of two. Respondents agreed that respondents were satisfied with the ease of this system to learn how to use it. Figure 3 for Q2 Rank shows that the majority of respondents gave a response to agree by giving a value of two. Respondents agreed that this system was simple in its use.

Figure 4 for Q3 Rank shows that the majority of respondents gave an agreed response by giving a value of two. Respondents agreed that this system was simple in its use. Figure 4 for Q4 Rank shows that the majority of respondents gave an agreed response by giving a value of two. Respondents agree that users can quickly complete tasks and challenges.
Figure 3. First question graph

Figure 4. Third question graph

Figure 5. Fifth question graph

Figure 5 for Q5 Rank shows that the majority of respondents gave a response to agree by giving a value of two. Respondents agree that users can complete tasks and challenges efficiently. Figure 5 for Q6 Rank shows that the majority of respondents gave an agreeing response by giving two and three balanced scores. Respondents agreed that users felt comfortable using the KRS system.

Figure 6 for Q7 Rank shows that the majority of respondents responded strongly to agree with giving a value of one. Respondents strongly agree that the system is easy to learn about its use. Figure 6 for Q8 Rank shows that the majority of respondents gave an agreed response by giving a value of two. Respondents agreed that when the respondent made a mistake when using the system, it was easy to fix it.
Figure 7 for Q9 Rank shows that the majority of respondents gave a response to agree by giving a balanced value of two and three. Respondents agreed that the layout of the information displayed was clear. Figure 7 for Q10 Rank shows that the majority of respondents gave a response agreeing by giving a value of three. Respondents agreed that the system interface was fun.

Figure 6. Seventh question graph

Figure 7. Ninth question graph

Figure 8 for Q11 Rank shows that the majority of respondents gave a response to agree by giving a balanced value of two and three. Respondents agreed that respondents liked the system interface. Figure 9 is the average of eleven questions that have been submitted in the positive acceptance category for KRS system users. KRS users referred to here are students who are using KRS for the first time.

Figure 8. Eleventh question graph

Figure 9. Average of 11 questions
4. Conclusion
First-time user experience in using a new system certainly hopes to get a system that is easy to learn. Users will be easily frustrated in using a system that is difficult to learn, especially to carry out obligations such as filling in the KRS, which is the obligation of students at the beginning of each semester. Measurement of user experience is also more effective using interview measurement by using references from standard questions. Users will have more discussion before answering the questions. The measurement results show that the KRS system feels easy for the first-time users with a mean value of 2.59 on a scale of 7.

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