Understanding Usability Test of Operating Systems in University: Evidence from Indonesia

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ABSTRACT

The operating system is the most important computer system software. Currently, there are several operating systems that are so popular, including Windows and macOS. Usability measurements were made between the Windows and macOS operating systems. This study aims to measure the comparison of usage between Windows and Mac operating systems in lectures at the University. This study used a questionnaire with 13 questions asked and 250 respondents received, then analyzed the data using a Guttman measuring scale. The results show that the Windows operating system is more widely used with a much higher percentage than MacOS. The results of this study also prefer the Windows operating system with 84.61% while MacOS with 11.38%. Because starting in terms of popularity among university students, many use Windows because it is considered easier and the applications provided for free are different from prepaid MacOS.

Keywords: operating system, windows, macOS, usability test, university

INTRODUCTION

An operating system is a set of programs that manages computer hardware resources and provides common services for software applications. The operating system is the most important type of system software in a computer system. Without an operating system, users cannot run application programs on their computers, except for boot application programs. The operating system has a systematic schedule that includes calculating memory usage, data processing, data storage, and other resources. Examples of modern operating systems are Linux, Android, iOS, Mac OS X, and Microsoft Windows. Microsoft Windows is an operating system software released by Microsoft Inc. Microsoft Windows is the most popular information system software for PC users. The appearance of Windows which is "user-friendly" makes it the main choice". Macintosh is the name of a computer made by Apple Inc. Unlike Windows, which is commercially available and can be installed on almost any brand of computer, Mac OS can only be legally installed on Apple Macintosh computers. Every new purchase of an Apple computer will automatically get Mac OS along with some built-in applications (iLife Suite, Comic Life). Operating system security is part of the total computer system security problem. Computer system security is to ensure that resources are not used or modified by unauthorized persons.

Usability comes from the word usable which generally means it can be used well (Armstrong et al., 2019). Something can be said to be useful if failures in its use can be eliminated or minimized and provide benefits and satisfaction to users (Barnum, 2020). To measure usability depends on the ability of the user to complete a series of tests. Several parameters to measure Usability include Success Rate, measuring the level of success of users in completing all "tasks" on a website (Johan Reimon Batmetan et al., 2019). The Time a Task Requires, measures the time required by a user to complete a "task" on the website. Error Rate is the level of errors made by users when completing "tasks" on the website. User's Subjective Satisfaction is the level of user satisfaction in completing the entire "task" when interacting with the website (John Reimon Batmetan et al., 2020). The success rate of a system being adopted and having a good level of usability can also be determined from the age of the system user (Sanderegger et al., 2016). There are many models and techniques that can be used to measure the level of usability (Maramba et al., 2019), both desktop-based, mobile, and website-based (Klug, 2017) (I Wayan Yudha Saputra Nancy Runtukahu, 2021).

The main problem in using the operating system is the low level of adoption of the operating system. This can be seen from the number of users, especially at universities, who often change the operating system from one operating system to another or from one version to another. This happens because many of the users at universities still have a significant level of information

2

technology adoption even though there are quite a lot of activities that require technology support (J R Batmetan, 2018). This can be seen from the application design that is not in accordance with user behavior at the university (Johan Reimon Batmetan et al., 2019). This requires good design to build applications. It is very necessary that it is suitable, especially on mobile-based systems (Sumual et al., 2019). It is very important to measure the usability level of the use of operating systems in universities to ensure the best and most appropriate operating systems for users in higher education. This is very important to assist universities in providing appropriate and adequate information technology infrastructure according to university needs.

This study aims to measure the comparison of usage between Windows and Mac operating systems in lectures at the University. One of the questionnaire packages that can be used to measure usability is USE. USE can cover 3 aspects of usability measurement according to ISO, namely efficiency, effectiveness, and satisfaction. Several studies have shown that most product evaluations refer to these three dimensions, namely usefulness, satisfaction, and ease of use.

METHOD

Method of collecting data

The method of data collection is an important aspect of this research because of its role in the smoothness and success of a study. In this study, the data collection method was carried out by distributing questionnaires or questionnaires through survey media to obtain data. The form of the question is multiple choice (multiple choice questions). An open questionnaire is a questionnaire whose questions or statements give freedom to respondents to provide answers and opinions according to their wishes. In the questionnaire, the data is calculated using the Guttman Scale. The Guttman scale is a scale used to obtain answers from respondents that are clear (firm) and consistent. On this scale, it only has two scores, namely a score of 1 for question or statements that support and a score of 0 for questions or statements that do not support.

1) Data collected in this study, which is to see the usability comparison of Windows and macOS operating systems for UNIMA students, is carried out in the following way:
2) Make a questionnaire to be distributed to students.
3) Taking data samples from students through distributed questionnaires.
4) Measuring usability based on data from students about the two operating systems so that they get a comparison.

Data analysis

1) After the data in the form of questionnaires are filled in and collected, the data processing steps will be carried out as follows:
2) 1) A data check (questionnaire) was conducted to determine how much data was collected.
3) 2) After the data is obtained, we will begin to calculate the percentage of measurements through the answers given by the respondents.
4) 3) To calculate the percentage of respondents' answers, we use the Guttman scale measurement by Average Number / Number of Respondents x 100%
5) 4) The results of the data processing above will determine the percentage of usability of the two operating systems among UNIMA students.

RESULTS AND DISCUSSION

In this study, researchers used google forms as a media questionnaire to students at the University containing 13 questions. Questionnaires that have been distributed are then filled out by users based on their experience when using Windows and Macintosh operating systems.

In analyzing the data, the researcher used the Guttman scale gauge.

$$\frac{average\ amount}{number\ of\ respondents}\ x\ 100\%. \quad (1)$$

Table 1. Percentage of Measurement

Question	Answer 1 = Windows	Answer 0 = MacOS
P1	24	1
P2	18	7
P3	23	2
P4	23	2
P5	23	2
P6	24	1
P7	23	2
P8	19	6
P9	22	3
P10	23	2

P11	23	2
P12	21	4
P13	22	3
Total	288	37
Rata-Rata	22.15	2.84

Calculating Percentage Formula:

$$\frac{average\ amount}{number\ of\ respondents}\ x\ 100\%.$$

Windows Presentation:

$$\frac{22.15}{25}x\ 100\% =\ 88.61\%$$

MacOS Presentation:

$$\frac{22.15}{25}x\ 100\% = 11.38\%$$

So from the results of this measurement, it is found that the respondents prefer the Windows operating system with 88.61% than using MacOS with 11.38%.

The results of this study indicate that the Microsoft Windows operating system has a better usability level than the macOS operating system. This is interesting to note because of the various features provided, the two operating systems have almost the same features. Windows has the advantage of being simpler and offering a more user-friendly approach. While macOS put forward a more personalized approach to exclusivity with a charming, attractive, and more comfortable-to-use appearance. The main weakness of macOS is that it is not compatible with several applications that must be installed on the operating many users switch to Microsoft Windows. Windows itself has a strong base because almost all the applications provided can be installed and compatible with the operating system.

A better usability level of windows indicates that a simple, user-friendly system tends to have a better usability level for the user. This can be seen in the eye-tracking factor as a factor that

influences the usability level (Wang et al., 2019). In addition, the use of virtual reality also affects the level of usability at universities because many learning applications are available virtually, including augmented and virtual reality (Pranoto et al., 2017). Usability is also influenced by the type of device used. Devices that are widely used by users at universities are mobile devices that encourage increasing the level of usability at universities (Ahmad & Hussaini, 2021). Learning activities which are the main core of the university play an important role in the use of the operating system used by the user (Alhadreti, 2022). The majority of users are students and lecturers who are directly involved in active learning activities. This directly affects the selection of an operating system that has an adequate level of adoption and usability in order to support learning. Users at universities, according to these findings, the majority choose a Windows operating system that has a better usability level than MacOS. This is because it is more user friendly, easy to use, and more compatible with many applications provided at the university.

CONCLUSION

This study concludes that users prefer the Windows operating system with 84.61%, while MacOS with 11.38%. The level of usability on windows is better than on Macintosh. One of the determining factors is user-friendliness with a simpler and easier-to-use interface. Another thing is that the level of compatibility that Windows has been better than macOS because Windows is more compatible with many applications provided by the university. This can be seen in terms of popularity among Manado University students, many of whom use Windows because it is considered easier and the applications provided for free are different from the prepaid MacOS. However, there are some who choose MacOS because it is considered to have an elegant interface and a strong security system. In using the operating system, let us pay attention to the needs that are the main thing for users and the ease of using it, not forgetting to also pay attention to the security of data from the user. In today's modern era, most users are more concerned with convenience than security.

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