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Evaluation of the Usability Learning Management System during the Covid-19 Pandemic Using the Scale System

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Abstract

The Covid-19 pandemic has made E-learning users rapidly increase; this is due to the government's WFH (work from home) policy so that the entire process of learning activities in class is replaced with online learning models. One of the widely used E-Learning platforms is the UMM Learning Management System, as one of the widely used platforms, of course, it is necessary to evaluate satisfaction so that there will be improvements in the future. System Usability Scale is one of the evaluation methods used to see the usability of a software product. Usability evaluation was carried out to 10 student user respondents across generations. Based on the evaluation of the Usability E-learning platform, UMM's Learning Management System has a score of 82.8 and is considered to have fulfilled the points of usability.

Keywords
Usability; learning management system UMM; system usability scale.

I. Introduction

In recent years, the world is facing a big problem that started with the emergence of a disease outbreak caused by the corona virus or familiarly called Covid-19. Almost all aspects of life are affected and undergo significant changes. Various efforts have been made to minimize the spread of this virus, one of which is social distancing. The outbreak of this virus has an impact of a nation and Globally (Ningrum et al, 2020). The presence of Covid-19 as a pandemic certainly has an economic, social and psychological impact on society (Saleh and Mujahiddin, 2020). Covid 19 pandemic caused all efforts not to be as maximal as expected (Sihombing and Nasib, 2020).

All sectors inevitably have to follow this policy, starting from the economy, tourism, social, to education. In the circular letter of the Minister of Education and Culture of the Republic of Indonesia No. 3 of 2020 explains that during the Covid-19 pandemic teaching and learning activities apply distance learning from home with an online model or online learning. Distance learning is a planned teaching and learning activity outside the classroom environment and there is no face-to-face interaction between students and teachers, this learning emphasizes independent learning (Abidin, et al, 2020). This policy requires all educational institutions to be active and innovative in designing their learning activities. With innovations in distance learning during the Covid-19 pandemic, students will feel enthusiastic and lose boredom during activities, learning will be more varied and students will not be bored (N et al, 2021).

In practice, distance learning during the pandemic still often encounters obstacles such as poor signaling, late delivery of material, to the lack of media that supports students to develop through independent learning.

There are various media that can be used as a bridge for online learning during the Covid-19 pandemic, such as Edmodo, Zoom, Google Classroom, and Moodle LMS (Learning Management System). LMS (Learning Management System) is one of the

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methods used by higher education institutions to support the implementation of online learning properly and effectively.

LMS (Learning Management System) is an information system created and developed to help manage and support the process of teaching and learning activities so that material can be channeled properly from teaching staff to students. LMS is expected to make a major contribution to all parties involved.

On this occasion, the researchers focused on the LMS (Learning Management System) developed by the University of Muhammadiyah Malang. The LMS developed is an LMS using the Moodle platform. Suhaeb and Djawad (2019) explained that Moodle stands for Modular Object-Oriented Dynamic Learning Environment. Moodle is often also called the Course Management System. The use of Moodle for students is relatively easy and fast to understand. There are several features available in this LMS, including:

1. Class division of courses.
2. Features For Material Storage.
3. Group Division for Tasks.
4. Assignment Features.

learning media e-learning used must have advantages and disadvantages, including the LMS developed by UMM. A common drawback is that the user 's understanding of the use of an LMS is not yet evenly distributed, where the user should be a factor in whether an LMS is effective or not. As for the advantages offered, namely learning activities can still run well even though the situation is not supportive and knowledge is not evenly distributed on how to use the LMS.

Based on the problems above, the researcher feels it is necessary to evaluate the usability of the e-learning used, so that learning during the Covid-19 pandemic can run according to initial expectations and goals. Usability refers to the level of a certain product to achieve specific goals including efficiency, effectiveness, and satisfaction in a context of use (Kaya, Ozturk, & Gumussoy, 2020). In addition, usability serves to measure the level of user satisfaction with a product (Taylor et al., 2015).

One usability evaluation that can be done is by using SUS or System Usability Scale. SUS is an evaluation method used to determine the usability of a software product. SUS is also used to determine the level of student acceptance of various learning technology models (Revythi and Tselios, 2019). This evaluation is expected to determine the level of reusability of the LMS (Learning Management System) so that it is able to provide good results and according to future goals, as well as facilitate learning activities during the Covid-19 pandemic.

II. Review of Literature

2.1 E-learning

E-learning is a *Virtual Learning Environment* or VLE which is starting to be widely used and tested for its effectiveness (Hayashi, et al. 2020). Setiawan (2018) states that E-learning has two types of models, namely synchronous and asynchronous. Where in synchronous, students and teachers meet at one time and carry out the learning process directly even though in an online process. However, in asynchronous mode, students only need to access teaching materials that are already available on the platform that has been provided and can be accessed at any time without the need to make face-to-face meetings and make appointments with teaching staff.

2.2 LMS (Learning Management System)

LMS (Learning Management System) is a software that is used in online learning during the Covid-19 pandemic. LMS is used in managing, placing, and assessing materials (Mahnegar, 2012). The use of LMS during the teaching and learning process must meet the requirements of an adequate internet network connection. LMS usually has several supporting features such as online materials, discussion classes, learning resources, quizzes or assignments, attendance, types of exams, to student data.

2.3 Usability

Usability is an indicator measuring the level of usability of a system or equipment. *Usability* is a concept that focuses on making systems that are easy to learn and use. *Usability* is very important in an interaction design, consisting of several aspects, namely: flexibility, efficiency, behavior, effectiveness, utility, ease of learning, ease of memory and security. According to Nielsen *usability* is influenced by five quality components, namely:

1. Efficiency.
   Once *users* learn, how quickly can they perform tasks?
2. *Learnability.*
   How easily *users* complete basic tasks the first time they use it?
3. Error.
   How many errors do *users make*, how severe are these errors, and how easily can they recover from errors?
4. Memory.
   When *user* returns to the design after a period of not using it, how easily can they rebuild their proficiency?
5. Satisfaction.
   How fun is it to use it?

2.4 System Usability Scale

Technically, SUS has 10 question items that are packaged in the form of a questionnaire, but in its development, it may be possible to make an image called Pictorial-SUS (Baumgartner, Frei, Kleinke, & Sauer, 2019)

Table 1. Question items *SUS Questionnaire*

		Strongly Disagree				**Strongly Agree**
1	*I think that I would like to use LMS UMM frequently.*	1	2	3	4	5
2	*I found LMS UMM unnecessarily complex.*	1	2	3	4	5
3	*I thought LMS UMM was easy to use.*	1	2	3	4	5
4	*I think that I would need the support of a technical person to be able to use LMS UMM.*	1	2	3	4	5
5	*I found the various functions in LMS UMM were well integrated.*	1	2	3	4	5
6	*I thought there was too much inconsistency in LMS UMM.*	1	2	3	4	5
7	*I would imagine that most people would learn to use LMS UMM very quickly*	1	2	3	4	5

8	*I found LMS UMM very cumbersome (awkward) to use.*	1	2	3	4	5
9	*I felt very confident using LMS UMM..*	1	2	3	4	5
10	*I needed to learn a lot of things before I could get going with LMS UMM.*	1	2	3	4	5

The System Usability Scale (SUS) has 10 statement items, a 5-point Likert scale with response options from "*Strongly disagree*" to "*Strongly Agree*", and the score weighting is between 0-100. Table 1. and table 2. are examples of 10 statement items in the *System Usability Scale Questionnaire*. Weighting*System Usability Scale Score* which is divided into 5 *Letter Grades* from A, B, C, D, and F with a choice of rating *Excellent, Good, Ok, Poor*, and *Awfull.*

Table 2. Weighting *of SUS Questionnaire*

scores SUS Score	***Letter Grade***	***Adjective Rating***
Above 80.3	A	Excellent
Between 68 and 80.3	B	Good
68	C	OK
Between 51 and 67	D	Poor
Below 51	F	Awful

III. Research Method

The method used in this study is a quantitative method with data analysis quantitative measurement of the level of*Learning Management Systems* using *System Usability Scale* (SUS).

For the number of respondents needed in this study as many as 10 respondents who are active students across majors. Where technically the 10 respondents were given the SUS Questionnaire for the *Learning Management Systems*.

overall flow of research activities is as follows:

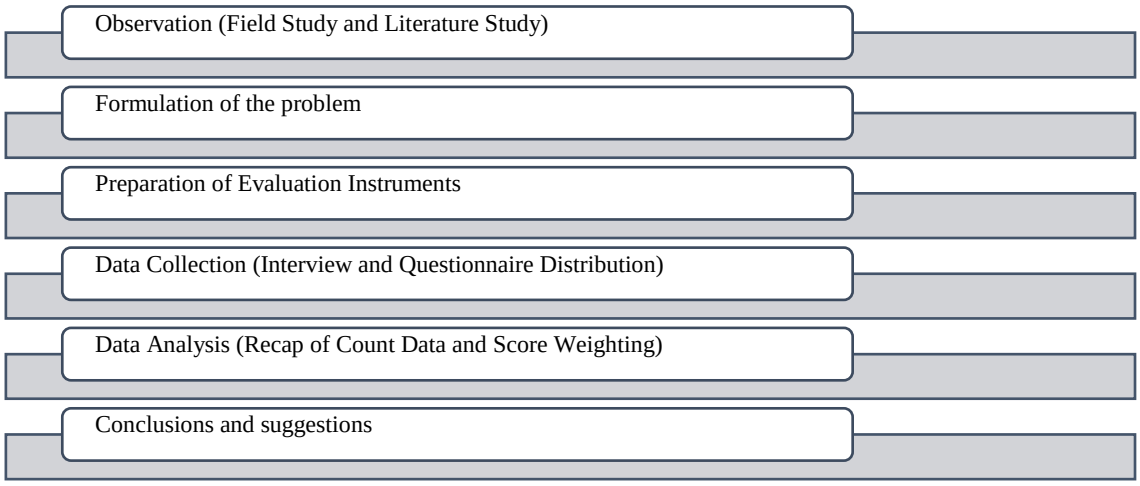

Figure 1. *Flow of Research Activities*

IV. Result and Discussion

Research only uses a questionnaire without any Pictoria-SUS. To make the *System Usability Scale Questionnaire,* the researcher used the SUS PDF generator which can be accessed through the website https://www.usabilitest.com/sus-pdf-generator. This is done as an effort to facilitate researchers in preparing the *System Usability Scale Questionnaire.* For the collection of instruments, a *Google Form* where respondents filled out a questionnaire through *the Google Form.* While data processing using Ms. *Excel.* The following is the result of distributing the *System Usability Scale Questionnaire.*

Table 3. Data *System Usability Scale Questionnaire for Learning Management Systems* UMM

No	Respondents	Original Score Google Classroom									
		Q1	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**
1	R1	4	1	4	1	5	2	5	2	5	2
2	R2	4	1	5	2	4	2	5	2	4	2
3	R3	4	1	5	1	5	3	5	2	5	2
4	R4	4	2	4	2	5	1	5	2	4	2
5	R5	4	2	5	2	5	1	4	2	4	2
6	R6	5	1	5	2	4	1	4	2	5	2
7	R7	3	2	4	2	5	2	5	2	4	2
8	R8	5	2	5	2	5	3	5	2	5	2
9	R9	3	2	4	2	5	2	4	2	4	2
10	R10	5	2	5	2	4	2	4	2	4	2

From these data, the researcher will calculate to give the weighting of the SUS *Score*. There are several rules in calculating the *SUS Score,* including the following:

1. For questions with odd numbers, *score* is the result of reducing the *user's score* (x) minus 1.
2. In questions with even numbers, the final score is the result of subtracting 5 minus the *user's score* (x).
3. The weighting of the SUS *score* is obtained from the overall sum of the total user scores multiplied by 2.5.

Table 4. Data for calculating *SUS Questionnaire* for *Learning Management Systems* UMM

No	**Respondents**	**Score results Calculate Google Classroom assessment**										**Total JML**	**Value JML*2.5**
		Q1	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**		
1	R1	3	4	3	4	4	3	4	3	4	3	35	88
2	R2	3	4	4	3	3	3	4	3	3	3	33	83
3	R3	3	4	4	4	4	2	4	3	4	3	35	88
4	R4	3	3	3	3	4	4	4	3	3	3	33	83
5	R5	3	3	4	3	4	4	3	3	3	3	33	83
6	R6	4	4	4	3	3	4	3	3	4	3	35	88
7	R7	2	3	3	3	4	3	4	3	3	3	31	78
8	R8	4	3	4	3	4	2	4	3	4	3	34	85
9	R9	2	3	3	3	4	3	3	3	3	3	30	75
10	R10	4	3	4	3	3	3	3	3	3	3	32	80
Total SUS Score on *Learning Management Systems* UMM													**828**

For further calculations, the SUS score of each respondent is sought for the average scoreaverage is by adding up the overall score and dividing by the number of respondents, the following formula is:

$\bar{x}$ = Average

$\sum x$ = Number of Score

n = Number of respondents

Figure 2. *Formula for calculating the SUS score*

From the results of the above calculation, the average score for *Learning Management Systems* 82.8. with an *"Excellent*" and *Letter Grade* "A" rating. From the questionnaire given there are suggestions for improvement for *Learning Management Systems* feature button*live conference*to complete its features, *attachments* of several learning videos, which can be accessed immediately.

V. Conclusion

Learning Management Systems is awebsite-based application to assist distance learning, especially during the COVID-19 pandemic and to facilitate access to materials related to what is assigned. However, the effectiveness of distance learning is not only influenced by lecturers, but students, and the learning system itself also takes part in influencing the effective level of learning. All aspects must work together or be interconnected in order to have the expected results. evaluation Usability using System Usability Scale Questionnaire, 10 active student respondents across the Learning Management Systems 82.8. with an "Excellent" and Letter Grade "A" rating. From this result, it was found Learning Management Systems had fulfilled the Usability element, but there were suggestions for improvement for Learning Management Systems, feature buttonlive conferenceto complete its features, attachments of several learning videos, which can be accessed immediately.

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