Analysis of Learning Governance Using E-Learning with Technology Acceptance Model (TAM) In the Covid-19 Pandemic ERA

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ABSTRACT

The learning with e-learning is not only due to aspects of the development of information technology but also due to the Covid-19 pandemic. The Covid-19 pandemic has forced all levels of society to adhere to the New Normal way of life. Elearning is a solution for learning in this pandemic era. This study will examine the analysis of learning management with Eleaning at Duta Bangsa University Surakarta with the Technology Acceptance Model (TAM) approach during the Covid-19 pandemic. This study uses a descriptive research approach with research respondents consisting of 25 lecturers and 48 students. Research data collection was carried out using an online questionnaire. The questionnaire consists of 16 questions which are the elaboration of 8 items of user satisfaction parameters in the use of the Elearning System. The eight items are Content, Format, Accuracy, Timeliness, Ease of Use, User Attitudes Towards Systems, Organizational Support and Perceived Attitude of Top Management. The results of testing and data processing, both data from lecturers and students, are normally distributed, with the Kolmogorov-Smirnov test. The results of testing the data related to the 16 questionnaire questions also show that the data is valid and reliable. User satisfaction with the implementation of learning through the Elearning System during the Covid-19 pandemic is quite high, above 75% strongly agree, even from 8 items, 7 items on average are above 80% strongly agree. From the results of data processing per item, an average of 4.15 was obtained for lecturer respondents, which means that acceptance strongly agrees with the E-learning system around 83.0%. For student respondents the average is 4.11, which means that the acceptance of the E-learning system is 82.2%. Content occupies the highest satisfaction score of 89.2% for lecturers and 86.2% for students. While the lowest level of satisfaction is organizational support, the satisfaction rate for lecturers is 76.4% and students are 77.8%.

Keywords: E-learning System, Technology Acceptance Model, Covid-19 pandemic, User Satisfaction.

I. INTRODUCTION

The learning with e-learning is not only the reason for the development of information technology but also the demand for health protocols to prevent the spread of the Covid-19 outbreak. Before the pandemic, e-learning was usually only placed as a supplement in learning, but during the Covid-19 pandemic, e-learning, especially online learning, became a substitute for face-to-face learning [1], [2], [3], [4]. Online learning because of the compulsion due to the pandemic obviously will not be able to replace exactly as face-to-face, let alone experimental courses or through practicum. Apart from the lack of a very vital role for e-learning for learning during a pandemic, online meeting facilities, evaluations and quizzes, uploading materials and so on, as well as even distribution of internet access to remote areas are very supportive of learning with e-learning. The implementation of learning with e-learning will run well if the management is carried out properly. Analysis of students, subject matter content, lecturers and also campus policies affect the quality of e-learning and the level of user satisfaction with e-learning [2], [3], [5].

The user perceptions of the use of e-learning in learning in the pandemic era are important for reference in the development of post-pandemic sustainable learning. User perceptions including lecturers in implementing learning through e-learning can be viewed from various aspects such as content, accuracy, format, easy of use, timeline, organizational support, user attitude towards and perceived attitude of top management. Lecturers' perceptions in these 8 aspects can be used as a reference for analysis and evaluation of the implementation of online learning during the pandemic [2], [6], [7].

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This study aims to produce an analysis model and test the implementation of e-learning during the Covid-19 pandemic at Duta Bangsa University Surakarta by using the Technology Acceptance Model (TAM) with variables in End User Computing Satisfaction (EUCS) which include content, accuracy, format. , convenience and time. The results of the evaluation of the level of satisfaction with the implementation of e-learning will be used to improve and improve e-learning in terms of the quality of information technology, learning content, responsiveness of students and lecturers as well as e-learning management by the campus [8], [9], [10].

II. METHODS AND MATERIAL

A. Technology Acceptance Model

The Technology Acceptance Model (TAM) is a model that is built to analyze and understand the factors that influence the acceptance of the use of information technology which was first introduced by Fred Davis in 1986 [11], [12]. TAM is the result of the development of Theory of Reasoned Action (TRA), which was first developed by Ajzen and Fishbein (1980). TAM aims to explain and estimate user acceptance of an information system. TAM provides a theoretical basis for knowing the factors that influence the acceptance of technology in an organization [12]. TAM explains the causal relationship between belief (in the benefits of an information system and its ease of use) and the behavior, goals / needs, and actual use of users of an information system [6], [13].

The TAM model is adopted from the TRA model. TAM adds two main constructs to the TRA model, namely perceived usefulness and perceived ease of use.

These two constructs have a direct influence on behavior intention [11], [14], [15]. The TAM model can be seen in Figure 1.
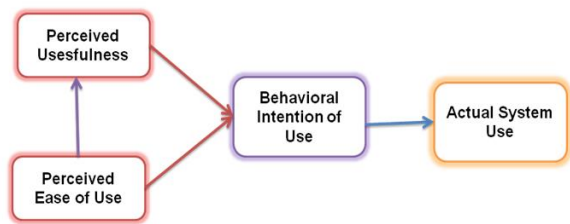

Figure 1. Model of TAM

One of the factors that can influence it is the user's perception of the usefulness and ease of use of information technology (IT) as a reasonable action in the context of technology users, so that someone's reason for seeing the benefits and ease of use of IT makes the person's actions / behavior a benchmark in acceptance. a technology [12], [14].

Measurement of satisfaction has had a long history in the discipline of information systems. In the scope of end-user computing, a number of studies have been conducted to capture the overall evaluation in which the end user has considered the user of an information system (eg satisfaction) and also the factors that shape this satisfaction [11], [14], [15].

End User Computing Satisfaction (EUCS) is a method for measuring the satisfaction level of users of an application system by comparing the expectations and reality of an information system. Definition of End User Computing Satisfaction of an information system is the overall evaluation of users of information systems based on their experience in using the system. The EUCS evaluation model was developed by Doll and Torkzadeh. Evaluation using this model emphasizes end user satisfaction with technological aspects, by assessing the content, accuracy, format, time and ease of use of the system. This model has been tested by other researchers to test its reliability and the results show no significant difference even

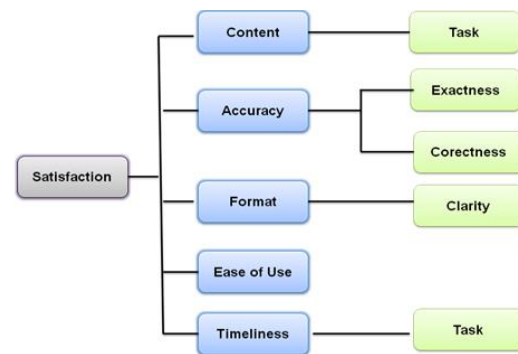though this instrument is translated in different languages [6], [7], [16].

Figure 2. Model of EUCS

B. E-learning

Elearning usually refers to learning methods that use electronic learning content. Web-based learning is one example of e-learning. In general, what is commonly called e-learning is web-based learning. With the widespread use of the internet, e-learning has now become a new, portable and flexible method for students to acquire essential knowledge. Currently e-learning is emerging as a new paradigm of modern education, especially for small and medium enterprises [2], [3], [17].

Many studies and empirical studies show that effective e-learning is beneficial for learning success [2], [3]. The first asynchronous elearning is a form of independent learning which is usually facilitated by media such as e-mail and group discussions; supports a working relationship between students and teachers, even when participants cannot be online at the same time. Thus, it is a key component of flexible e-learning [1], [7]. In contrast, synchronous e-learning allows for real-time and timely interaction between instructors and students which is generally supported by media such as video conferencing and chat. It has the potential to support electronic learners in the development of learning communities [2], [16].

C. Research Flow

This research involved several steps in the unit of the research framework. The flow of this research can be seen in the image below. The flow of this research shows the steps that are passed during the research process. The research flow is as shown in Figure 3 below.
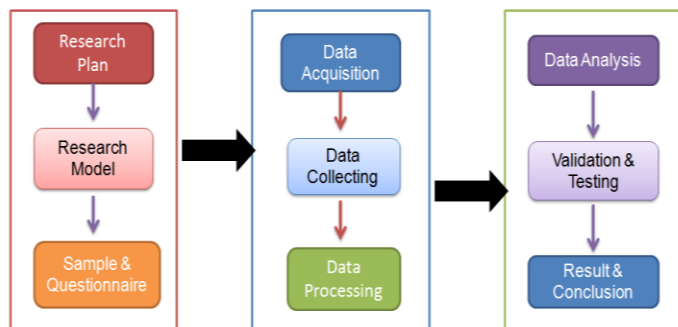

Figure 3. Research Flow

The research flow consists of 3 groups of stages. The first stage was related to the design and research model. At this stage, a focus group discussion (FGD) was conducted to determine the design, model and research tools in the form of questionnaires and research samples. The next stage consists of data acquisition via online, data collecting and data processing. Data processing used descriptive statistical methods. The last stage was the process of analysis and validation of the results consisting of data analysis. The data analysis process used normalization test, validity test, reliability test and correlation test. The results of the data processing were then validated and tested to strengthen the research results. The population of this study were students of the Faculty of Computer Science, University of Duta Bangsa Surakarta as users of e-learning system. In selecting the sample, this study used a combination of convenient sampling and random sampling techniques. The source of the data in this study consists of two parts, namely primary data and secondary data.

D. Research Questionnaire

The making the research questionnaire, first determined the variables and dimensions of the research variables that will be used. In this study the variables / constructs used in the questionnaire were based on the variables contained in the EUCS (End User Computing Satisfaction) method. The variables and variable dimensions to be studied are as follows table 1 :

TABLE I
RESEARCH QUESTIONNAIRE

Research Variable	Dimension Variable	Item
Content	1. E-learning provides adequate, useful and needed material. 2. E-learning provides useful modules and practical examples.	1 2
Accuracy	1. E-learning provides accurate and satisfying material. 2. Elearning provides information according to user access rights.	3 4
Format	1. E-learning has an attractive appearance, easy to understand and compatible. 2. Elearning has a useful and satisfying format.	5 6

Research Variable	Dimension Variable	Item
Ease of use	1. E-learning has an easy-to-use menu.	7
	2. E-learning can simplify and improve the quality of learning.	8
Timeliness	1. E-learning can be accessed by users quickly.	9
	2. E-learning provides the latest material.	10
Organizational Support	1. I am satisfied with the speed of response of the organization in handling complaints	11
	2. Organizations are effective in dealing with problems that occur in e-learning	12
User AttitudeTowards Elearning System	1. E-learning is used by users according to the rules.	13
	2. Users can provide input for improvement and progress in learning.	14
Perceived Attitudeof Top Management	1. Duta Bangsa University provides training using	15
	2. Duta Bangsa University Surakarta provides e-learning socialization	16

III.RESULTS AND DISCUSSION

Based on the results of questionnaires distributed directly to students respondents, 56 respondents were collected. After tracing the data, it was found that 8 questionnaires had invalid data so that the remaining 48 respondents were left for data processing. The general description of the respondents who participated was male 35 people (73%) of the remaining 13 female respondents (27%).
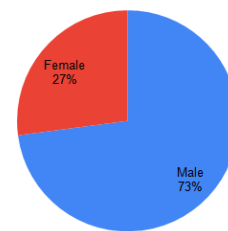
Distribution Students' Gender

. **Figure 4.** Distrubution Students' Gender

In this study, descriptive statistical tests were emphasized on the number of samples (N), the minimum answer value (min), the maximum answer value (max), the average value (mean) and standard deviation (Std. deviation). The five things include content, format accuracy, timeliness, ease of use. User satisfaction is also determined by the user attitude-towards e-learning system and organizational support and perceived attitude of top management.

TABLE 2.
DESCRIPTIVE STATISTICS OF RESPONDENTS

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
C1	48	2	5	4.31	0.803
C2	48	1	5	4.31	0.903
A3	48	2	5	4.10	0.905
A4	48	1	5	3.94	0.932
F5	48	2	5	4.27	0.844
F6	48	1	5	3.94	1.019
EU7	48	1	5	4.23	1.036

EU8	48	2	5	4.25	0.863	C2	48	0.318	0.000
T9	48	1	5	4.08	0.964	A3	48	0.256	0.000
T10	48	2	5	4.19	0.891	A4	48	0.298	0.000
OS11	48	1	5	3.94	0.976	F5	48	0.306	0.000
OS12	48	1	5	3.83	1.038	F6	48	0.233	0.000
UA13	48	1	5	4.04	0.874	EU7	48	0.271	0.000
UA14	48	2	5	4.31	0.879	EU8	48	0.308	0.000
PA15	48	1	5	4.06	1.099	T9	48	0.246	0.000
PA16	48	1	5	4.00	1.238	T10	48	0.257	0.000
Valid N (listwise)	48					OS11	48	0.255	0.000
						OS12	48	0.210	0.000
						UA13	48	0.231	0.000
						UA14	48	0.325	0.000
						PA15	48	0.261	0.000
						PA16	48	0.270	0.000

The results in table 2. show the average results of each instrument vary between 3.83 to 4.31. The highest average value was obtained by indicators C1 (4,31), C2 (4,31), and UA14 (4,31). These results also show the usage behavior of the respondents. Where most of the respondents gave their opinion E-learning provides useful modules and practical examples, E-learning provides sufficient, useful and needed material and users can provide input for improvement and progress in learning. The results of the standard deviation of most of the data are quite small below 1, there are only 2 that are above 1, namely PA32 and PA33. Broadly speaking, these results show that the overall distribution of data and data consistency is quite good.

Based on the normality test above, the processed data is valid so that it can be used for research. The result looks like table 3, below.

TABLE 3.
RESPONDENTS KOLMOGOROV-SMIRNOV NORMALITY TEST

	N	Test Statistic	Asymp. Sig. (2-tailed)
C1	48	0.304	0.000

The results of the validity test for 48 respondents' data are 100% valid. With this validity test the data can be used for further analysis. The results of the reliability with a Cronbach Alpha value of 0.960 for 16 items, the research data is reliable.

TABLE 4.
RESPONDENTS' RELIABILITY TEST RESULTS

Item	Item Description	Result
Content	The e-learning system provides adequate, useful/needed materials and provides practical modules and examples.	4,31 (86,2%)
Accuracy	The e-learning system provides accurate and satisfactory material and provides information according to the user's access rights.	4,02 (80,4%)
Format	E-learning has an attractive appearance, is easy to understand	4,10 (82,0%)

	and is compatible and has a useful and satisfying format.	
Ease of Use	E-learning has a menu that is easy to use and can simplify and improve the quality of learning.	4,24 (84,8%)
Timeliness	E-learning can be accessed by users quickly and provides up-to-date material.	4,14 (82,8%)
Organizational Support	Duta Bangsa University provides organizational response speed in handling complaints and is effective in dealing with problems that occur in Elearning	3,89 (77,8%)
User Attitude Towards Elearning System	The e-learning system is used by the user in accordance with the rules and the user can provide input for improvement and progress in learning.	4,18 (83,6%)
Perceived Attitudeof Top Management	Duta Bangsa University provides training to use and provide e-learning socialization.	4,03 (80,6%)

From the results of the TAM analysis of this study, it was found that all items consisting of content, format, accuracy, timeliness, ease of use, user attitude towards e-learning, organizational support, and perceived attitude of top management. From the results of data processing per item obtained for student respondents an average of 4.11, which means the acceptance strongly agrees with the e-learning System 82.2%.

IV.CONCLUSION

The analysis and evaluation of the use of the E-learning System at Duta Bangsa University Surakarta using the Technology Acceptance Model during the Covid-19 pandemic can run well. Research respondents were 48 students. Research data collection was carried out using an online questionnaire. The questionnaire consists of 16 questions which are the elaboration of 8 items of user satisfaction parameters in the use of the Elearning System. The eight items are Content, Format, Accuracy, Timeliness, Ease of Use , User Attitudes Ttowards Systems, Organizational Support, and Perceived Attitude of Top Management.

The results of testing and data processing, both data from lecturers and students, are normally distributed, with the Kolmogorov-Smirnov test. The results of testing the data related to the 16 questionnaire questions also show that the data is valid and reliable. User satisfaction with the implementation of learning through the Elearning System during the Covid-19 pandemic is quite high, above 75% strongly agree, even from 8 items, 7 items on average are above 80% strongly agree. From the results of data processing per item, an average of 4.11 was obtained, which means that the acceptance strongly agrees with the E-learning system of 82.2%. Content occupies the highest satisfaction score of 86.2% for students. While the lowest level of satisfaction is organizational support, the student satisfaction rate is 77.8%.

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