
Students' Adoption of E-Learning Program during Covid 19: Impact on Students' Engagement and Effective Teaching Method

Y. Johny Natu Prihanto¹, Simon Petrus Wenehenubun², Raden Nayaka Widhi Mahardika³

johny.natu@umn.ac.id, simon.wenehenubun@umn.ac.id², nayaka@student.umn.ac.id³

Faculty of Business, Universitas Multimedia Nusantara^{1,2}, Faculty of Art and Design, Universitas Multimedia

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Abstract

The coronavirus (COVID-19) pandemic has forced universities, as well as governments, businesses and other institutions, to rapidly increase their provision of digital services and in doing so accelerated a number of existing trends. Universities have had to rapidly evolve their digital strategies and the digital literacy and skills of their staff in order to respond to the current demands for online delivery and global digital connectivity. This study aims to find the factors that influence student acceptance of e-learning programs during a pandemic using the Technology Acceptance Model (TAM) approach. The study adopts quantitative research methods and data collected from 300 respondents using convenience sampling methodology. The questionnaire was distributed online to 14 universities in Indonesia. The structural equation model PLS (SEM-PLS) was utilized in this study.

The results showed that two major problems rendered the online teaching and learning less effective than expected. One problem was arising from the institutional unpreparedness. Both lecturers and students were involved in struggling with this sudden move on global and untested scale.

From the practical point of view, this study offers implications for government and universities to provide policies in the process of adopting e-learning regarding on students' engagement and effective teaching method.

Keywords: E-Learning, Covid-19, Technology acceptance model (TAM), Online teaching and learning, Learning during emergency.

I. INTRODUCTION

The Covid-19 pandemic has affected many sectors of life, including the higher education sector. Digital ecosystems that surround higher education and catalyzed by the COVID-19 pandemic exposed the limitations of face-to-face, in-person and campus-based education. For universities to remain relevant, they must develop capabilities that match the needs of the digital age. The coronavirus (COVID-19) pandemic has forced universities, as well as governments, businesses and other institutions, to rapidly increase their provision of digital services and in doing so accelerated a number of existing trends. Many universities operate in resource-constrained environments with limitations in infrastructure, access to electricity and Internet connectivity, further compromised by students located in remote and disadvantaged areas including mountainous areas and isolated villages. Universities have had to rapidly evolve their digital strategies and the digital literacy and skills of their staff in order to respond to the current demands for online delivery and global digital connectivity [1]. The educational institutions had to adjust rapidly to the situation in order to keep the education going. This has given rise to an ongoing demand for online learning. Although the faculty is grappling with new ways to handle this abrupt transition to online education, students remain glued to their cell phones and computer screens [2].

During the COVID-19 pandemic, large-scale, national initiatives to leverage technology are growing and expanding rapidly in support of remote learning, distance education and online learning. Though universities in Indonesia have transformed their learning processes from real to virtual for the purpose of coping with the current pandemic situation, the issues and challenges faced by the stakeholders need to be researched especially because such a transition has been unprecedented. Such studies would help improve the processes for the benefit of faculty as well as students. Online learning has brought significant challenges to students. In face-to-face learning, students and lecturers can see each other's body language and maintain eye contact. However, in the online setting, this is replaced by audio and video which can be disruptive when the line connection is not good. Student consultation can only be done at a predetermined time, that is, when lecturers and students are logged in to the learning management platform concurrently. In short, promoting students' engagement through active learning can be a huge obstacle as online learning limits group discussion integration during the online class [3].

Many universities in Indonesia have not yet developed a systematic approach to exploring and mapping the digital competences of students, embracing both technology-based and "digital citizenship" areas as a priority agenda [4]. There is a proliferation of practical skills-based short courses and online resources developed by universities to help students achieve a baseline of

skills for the academic environment. Online teaching is a relatively new concept in developing countries such as Indonesia. COVID-19 epidemic has made it mandatory for the teachers of developing countries to use online platforms for teaching and assessment to support the education sector. The teachers need to adapt the technology for the successful execution of online teaching and assessments [5].

This article investigates some of the issues faced by universities in Indonesia when rapidly moving their teaching online during the onset of the COVID-19 pandemic. Theoretical and empirical data are used to analyze theoretical vs lived policymaking impacts. This study aims to find out how students in Indonesia's universities perceive online teaching/learning during the present pandemic, the methods of online teaching/learning being used by faculty and the challenges being faced by the students and lecturers.

II. LITERATURE REVIEW

Technology Acceptance Model (TAM)

The TAM model was developed by Davis [6]. This model is an adaptation of the Theory of Reasoned Action (TRA) which is specifically designed for modeling user acceptance of information systems (IS). The aim of TAM is to provide an explanation of the general determinants of Internet acceptance, which is capable of explaining user behavior across various computing technologies and user populations. Specifically, TAM is based on two beliefs namely, perceived usefulness and perceived ease of use. TAM states that computer use is determined by behavioral intentions to use, and behavioral intentions to use are determined by perceived usefulness. Davis found that perceived usefulness and perceived ease of use had a strong impact on behavioral intention. Perceived usefulness is the main factor that has a direct effect on behavioral intentions, determines most attitudes and mediates the effect of perceived ease of use on behavioral intentions [7].

E-learning

The term e-learning has been used in the field of education since several decades ago [8]. There are various definitions of e-learning. Some researchers see e-learning as “the presentation of teaching materials through electronic media, such as internets, intranets, extranets, satellite broadcasts, audio/video, interactive TV, and CD-ROMs [9]. Other researchers view e-learning as “web-based learning using communication, collaboration, knowledge transfer, and web-based training, to add value to individuals and organizations” [10]. Like other educational technologies, there are strengths and weaknesses associated with the use of e-learning [11]. Although e-learning helps building community among students and between students and

lecturers, and develops problem-solving skills [12], it also increases the workload for both students and lecturers. Also, some claim that e-learning is less reliable than traditional learning models where direct feedback can be obtained and collaborative activities can be measured. In addition to these weaknesses, the e-learning system has become an important part of the presentation of a modern university curriculum [12].

Heutagogy

Heutagogy is a term coined by Stewart Hase and Chris Kenyon of Southern Cross University in Australia, and is also called self-determined learning [13]. The basic principle of the heutagogy approach is that a learner must be the center of learning process, and therefore, that 'learning' should not be seen as a 'must' depending on the teacher/lecturer, curriculum, facilities, and other factors outside the learner. Of course, in order for this heutagogy to take place effectively, the following requirements must be met: (1) knowing how to learn must be a major skill for the learner. (2) must create a fun learning world. (3) avoiding the dominance of the teacher/lecturer who creates learning that focuses on the teacher/lecturer. (4) teachers/lecturers focus on the learning process, not just focusing on learning materials based on the curriculum. (5) learners (students) choose topics based on their own choices and are responsible for themselves to master the learning topics. (6) learners (students) learn things beyond their discipline. (7) learning is determined by oneself according to all the points above. Thus, learners are seen as "the main agents in their learning process, which only occurs as a result of their personal experience [14]. In later decades, a different story about education is seen in terms of social media, MOOCs and digital tools, which allow learners to have more control over what they learn and how and where they learn [15]. Heutagogy also enables learners to have the skills and capacities that help make a better transition into the workforce [16], where companies are currently looking for innovative workers, good at problem solving and have good communication skills, and those who are able to apply what they learn in real life situations.

Engagement with learning

The term student engagement is a multifaceted construct, and different researchers worked on conceptualizing the same. It has been defined differently by scholars and researchers. Student engagement consisting of three interrelated proportions including emotional, cognitive and behavioral engagement [17]. Among them, the emotional component includes student's positive or negative attitude toward class or school, relationships with peers and teachers and belongingness toward their academic institution. The cognitive component includes the perceived relevance of academic work, self-regulated learning, application of profound learning strategies and using the essential cognitive approaches for the conception of multifaceted concepts. Finally, the behavioral component of student engagement refers to school-related conduct, attendance,

contribution in learning and participation in academic activities [18].

The student–teacher engagement and student to student engagement in conventional classrooms is very strong. For input or discussions, learners may approach the teachers and fellow students and get their questions answered on-the-spot. E-learning is not yet designed to promote open-ended or crowd learning, as the online classes are recorded in video lectures. These challenges and problems associated with modern technology vary from downloading errors, installation problems, authentication issues, audio and video issues and so forth [2]. Often online teaching is considered by students to be dull and unengaging. Also, the new learning system has resulted in extended work hours for the educators, encouraging increased pressure. Personal care is also an enormous issue facing online learning. Students want directional interaction that sometimes becomes difficult to implement. Before the students experience what they read, the learning process cannot achieve its full potential. Recorded lectures are all theoretical at times and does not allow students to practice and effectively learn. Not all students and learners are the same; they differ in degree of skill and level of confidence. Some may not feel comfortable studying online, which results in increased frustration and uncertainty. Insufficient customization of learning processes will interrupt the teaching process and create an imbalance [2].

Research Questions

The sudden and forceful impact of the COVID-19 pandemic raised numerous questions in terms of higher education governance. What are the barriers that are faced by the students and teachers during online teaching? What effect has the pandemic had on higher education autonomy and the commoditization of the higher education sector within Indonesia’s developing state? What actions, and by which entities, were taken to manage higher education during the crisis?

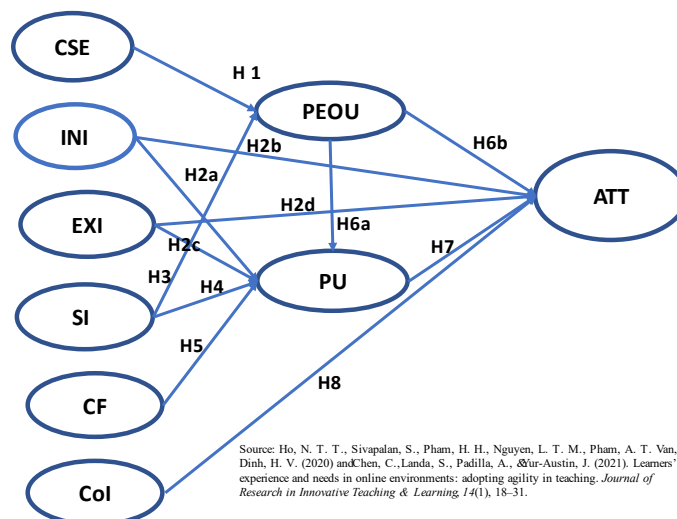


Figure 1. Research Framework

III. RESEARCH METHODS

A total of 300 questionnaires were distributed to 14 Universities in Indonesia, out of which 176 were considered for the present study, using a convenient sampling method. The reason for collecting data through convenience sampling was that it was easy to connect with the respondents due to familiarity with the institution. Second, the researchers found the data collected through this technique as extremely speedy, easy and cost-effective. The study used a cross-sectional survey. The data collection period was for 3 months spanning from (1st April to 30th June) 2021. The data was collected using an online survey. A Likert's five-point scale was used to receive a spread of various responses. The scaling options used to collect the data are

(1) strongly disagree; (2) disagree; (3) neither agree nor disagree; (4) agree; (5) strongly agree. The collected data using a survey was exposed to a factor analysis using smart PLS, a flexible statistical software used by the social science researchers. Before proceeding with the factor analysis the validity and reliability of the collected data was checked. The results showed a clear picture of the basic validity and reliability test results.

IV. FINDINGS AND RESULTS

Analysis of Respondents Characteristics

The number of respondents based on gender is generally female (students): 117 respondents or 66.5%. Meanwhile, the respondents with male were 59 respondents or 33.5%. The number of respondents based on university or college origin obtained a total of 14 universities or colleges, of which the highest was from STIE Triguna as many as 66 respondents or 37.5%. Multimedia Nusantara University also shows a fairly high frequency of 46 respondents or 26.1%. Based on the year of study, the respondents were in the first year of college, namely 59 respondents or 33.5%. The number of respondents based on majors, obtained in general the respondents in this study were management students, namely 46 respondents or 26.1%.

Descriptive Statistical Analysis

Computer self-efficacy (CSE) variable has an overall average of 3.39. This means that in general, respondents answered choice 3 (neutral) which means that students' abilities regarding computer self-efficacy are quite good but need to be improved. The highest average item is item 1 (I can complete my learning activities through an online learning system even though I have never used an online learning system before) with an average of 3.61.

Interpersonal influence (INI) variable has an overall average of 3.71. This means that in general

respondents answered choice 3 (neutral), which means that students' abilities regarding co-interpersonal influence are good enough but need to be improved. The highest average item is item 1 (my lecturer told me that I will be studying online during the Covid-19 period) with an average of 3.82.

External influence (EXI) variable has an overall average of 3.62. This means that in general respondents answered choice 3 (neutral) which means that students' abilities regarding external influence are quite good but need to be improved. The highest average items are items 1 and 3 (I read a new report that online learning is a good way of learning during the Covid-19 period; and mass media reports convinced me to use online learning methods during the Covid-19 period) with an average of 3.66.

The System Interactivity (SI) variable has an overall average of 2.93. This means that in general, respondents answered choice 2 (not good) which means that students' abilities regarding system interactivity are still low. The highest average item is item 3 (communication equipment in the online learning system is very effective) with an average of 3.04.

Computer content feature (CF) variable has an overall average of 3.13. This means that in general, respondents answered choice 3 (neutral) which means that students' abilities regarding feature content are quite good but need to be improved. The highest average item is item 1 (current course content has been redesigned to match the online learning system during the Covid-19 period) with an average of 3.28.

Perceived ease of use (PEOU) variable has an overall average of 3.18. This means that in general respondents answered choice 3 (neutral) which means that the students' ability regarding perceived ease of use is good enough but needs to be improved. The highest average item is item 2 (I found the online learning system easy to use.) with an average of 3.36.

Perceived usefulness (PU) variable has an overall average of 3.24. This means that in general respondents answered choice 3 (neutral) which means that students' abilities regarding perceived usefulness are quite good but need to be improved. The highest average item is item 3 (using an online learning system provides greater flexibility in learning during the Covid-19 period) with an average of 3.58.

Competence of Instructor (COI) variable has an overall average of 3.35. This means that in general, respondents answered choice 3 (neutral) which means that students' abilities regarding the competence of instructors are quite good but need to be improved. The highest average item is item 5 (instructors (lecturers) continue to ensure that students achieve learning/lecture outcomes) with an average of 3.78.

Attitude (ATT) variable has an overall average of 3.30. This means that in general, respondents answered choice 3 (neutral) which means that students' abilities regarding attitude are quite good but need to be improved. The highest average item is item 1 (using an online learning system during the Covid-19 period is a good idea) with an average of 3.56.

Evaluation of the Measurement Model (Outer Model)

The convergent validity test is carried out based on the factor loading value and the average variance extracted value. Based on the factor loading value, the item is said to be valid if the value is greater than 0.70. Based on the AVE value, it is good if it has a value greater than 0.50 [19] and the correlation between variables is smaller than the AVE square. The results showed that all items in each variable have a factor loading value above 0.7 so that all items to be valid. The results also showed that the AVE (Average Variance Extraction) value of the research model for all research variables has a value above 0.5 so that the AVE value for convergent validity testing has met for further testing. Thus, the convergent validity test has been fulfilled.

Discriminant Validity Test

This test is based on the value of the cross loading measurement with the construct and value of Average Variance Extracted (AVE) square. Cross Loading factor to find out whether the latent variable has an adequate discriminant is by comparing the correlation between indicators and other latent variables [19]. If the correlation value of the construct with the measurement item is greater than the value of the correlation with other constructs, it indicates that the latent construct predicts the size of their block better than the size of the other blocks, and it is said that the construct has high discriminant validity [20]. The loading factor indicator in variable construction must be higher than all other construction loadings provided that the cut off factor loading value is greater than 0.70 [20]. The results of the discriminant validity test on the technical serviced role variable show that the correlation value of the construct with its indicators is greater than the correlation value with other constructs. Thus it can be concluded that the latent construct shows good discriminant validity because it can predict indicators on the technical serviced role variable better than indicators in other blocks.

The second discriminant validity test is the AVE square value, where the instrument and data are valid if the AVE square value (diagonal value) is higher than the correlation between constructs. For example, in X1 (CSE) it has a rave value of 0.818 so this value is greater than the correlation between X2 and X1 which is 0.345 and so on until the correlation between Y3 and X1 is 0.388. These results indicate that the instrument and data are valid, and both discriminant validity tests are met.

Table 1. Discriminant Validity

	X1 (CSE)	X2 (INI)	X3 (EXI)	X4 (SI)	X5 (CF)	X6 (COI)	Y1 (PEOU)	Y2 (PU)	Y3 (ATT)
X1 (CSE)	0.818								
X2 (INI)	0.345	0.859							

X3 (EXI)	0.311	0.500	0.859						
X4 (SI)	0.262	0.177	0.511	0.833					
X5 (CF)	0.408	0.277	0.450	0.595	0.828				
X6 (COI)	0.380	0.303	0.430	0.404	0.644	0.803			
Y1 (PEOU)	0.340	0.285	0.596	0.522	0.657	0.546	0.812		
Y2 (PU)	0.320	0.239	0.550	0.482	0.652	0.537	0.698	0.831	
Y3 (ATT)	0.388	0.277	0.612	0.453	0.632	0.551	0.616	0.719	0.862

Reliability Test

A questionnaire is reliable if a respondent's answer to a question is consistent or stable from time to time [19]. Based on the PLS method, the reliability of the indicators in this study was determined from the value of composite reliability and Cronbach's alpha. The rule of thumb is that the value of alpha or composite reliability must be greater than 0.7. The composite reliability value of the research model shows that each variable has a composite reliability value above 0.70. From these results it can be concluded that the research model has met the value of composite reliability and this research is declared reliable. According to [19] the reliability test was carried out to prove the consistency and accuracy of the instrument in measuring constructs. The reliability of a construct with reflexive indicators can be done with Cronbach's alpha with a value of > 0.70 . The Cronbach's alpha value from the research model shows that each variable has a Cronbach's alpha value above 0.70. It can be concluded that the research model has met the value of Cronbach's alpha and this research is reliable.

Evaluation of the Structural Model (Inner Model)

Evaluation of structural models can be done with the criteria of coefficient of determination (R^2), predictive relevance (Q^2), overall test, and path coefficients significance test [21].

Coefficient of Determination Test / R Square (R^2)

The evaluation of the inner model is done by looking at the Coefficient of Determination (R^2). R^2 is used to assess the goodness of fit in the regression analysis. The value of R^2 describes the predictive power in the model sample [21].

R Square (R^2)

Variable	Determination Coefficient
<i>Perceived ease of use (PEOU)</i>	0.317
<i>Perceived usefulness (PU)</i>	0.577

Attitude (ATT)

0.609

The variable Perceived ease of use has an R² value of 0.317 which means that the Computer self-efficacy (CSE) and System interactivity (SI) variables can affect the Perceived ease of use by 31.7%. Perceived usefulness variable has an R² value of 0.577 which means that Interpersonal influence (INI), External influence (EXI), System Interactivity (SI), Content Feature (CF) variables can affect Perceived usefulness by 57.7%. The Attitude (ATT) variable has an R² value of 0.609 which means that the variables Interpersonal influence (INI), External influence (EXI), Competence of Instructor (COI), Perceived ease of use (PEOU), and Perceived usefulness (PU) can affect Attitude (ATT) by 60.9%.

Goodness of Fit Index

The purpose of testing the Goodness of Fit Index (GoF) is to validate the combined performance of the measurement model (outer model) and structural model (inner model) obtained through the following calculations [21]:

$$\text{GoF} = \sqrt{\text{AVE} \times R^2}$$

$$\text{GoF} = \sqrt{0,696 \times 0,501}$$

$$\text{GoF} = \sqrt{0,349}$$

$$\text{GoF} = 0,590$$

Notes :

$$\text{AVE} = (0,669+0,738+0,738+0,693+0,686+0,645+0,659+0,690+0,743)/9 =$$

$$0,696 \quad R \text{ square} = (0,317+0,423+0,609)/3=0,501$$

The results of the calculation of the Goodness of Fit Index (GoF) show a value of 0.590. Based on these results, it can be concluded that the overall performance of the measurement model (outer model) and structural model (inner model) is good because the Goodness of Fit Index (GoF) value is more than 0.25 (moderate scale). Based on the results of the GoF, the structural model is feasible to use and can explain the population or the actual situation well.

Predictive Relevance (Q²)

The purpose of testing predictive relevance (Q²) is to validate the model [21]. The small difference between the prediction and the original value translates into a higher Q² value, thus indicating a higher prediction accuracy. The value of Q² is expected to have a value greater than zero which indicates the predictive accuracy of the structural model. The results of the Q² calculation are as follows:

$$Q^2 = 1 - (1 - R_1^2) (1 - R_2^2) (1 - R_3^2)$$

$$Q^2 = 1 - (1 - 0,317) (1 - 0,577) (1 - 0,609)$$

$$Q^2 = 0,887$$

Based on the results of the calculation of predictive relevance (Q^2) above, it shows a value of 0.887. In this research model, the endogenous latent variable has a predictive relevance value (Q^2) which is greater than 0, so that the exogenous latent variable is suitable as an explanatory variable that is able to predict the endogenous variable, namely performance or in other words proves that this model is considered to have predictive relevance. the good one.

Hypothesis Test

The coefficient test on the path analysis is a measure of the inner model with the provision that the significance value is less than 0.05 or 95% bootstrap percent [21]. Hypothesis testing between constructs was carried out using the bootstrap resampling method. Calculation Hypothesis test using SmartPLS version 3.27. It can be seen that from the Path Coefficient value, namely the t-statistic value of the relationship between variables in the study. Provisions on hypothesis testing are if p-values <0.05 and t count > t table; then H_0 is rejected. The value of the t table is 0.05;(n-k-1)) so that the t table is obtained, namely 0.05; (145-3-1)) = 1.977. The following are the results of calculations on structural equation analysis.

Path Coefficient and P-Values

Variabel	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
X1 (CSE) -> Y1 (PEOU)	0.218	0.223	0.078	2.781	0.006
X2 (INI) -> Y2 (PU)	-0.066	-0.066	0.057	1.147	0.252
X2 (INI) -> Y3 (ATT)	-0.037	-0.029	0.056	0.660	0.510
X3 (EXI) -> Y2 (PU)	0.215	0.208	0.084	2.571	0.010
X3 (EXI) -> Y3 (ATT)	0.277	0.286	0.076	3.651	0.000
X4 (SI) -> Y1 (PEOU)	0.465	0.469	0.066	7.016	0.000
X4 (SI) -> Y2 (PU)	-0.011	-0.008	0.079	0.138	0.890
X5 (CF) -> Y2 (PU)	0.334	0.340	0.077	4.354	0.000
X6 (COI) -> Y3 (ATT)	0.174	0.172	0.084	2.079	0.038
Y1 (PEOU) -> Y2 (PU)	0.375	0.375	0.087	4.303	0.000
Y1 (PEOU) -> Y3 (ATT)	0.058	0.053	0.092	0.636	0.525
Y2 (PU) -> Y3 (ATT)	0.441	0.440	0.078	5.627	0.000

The following are the results of the structural equation:

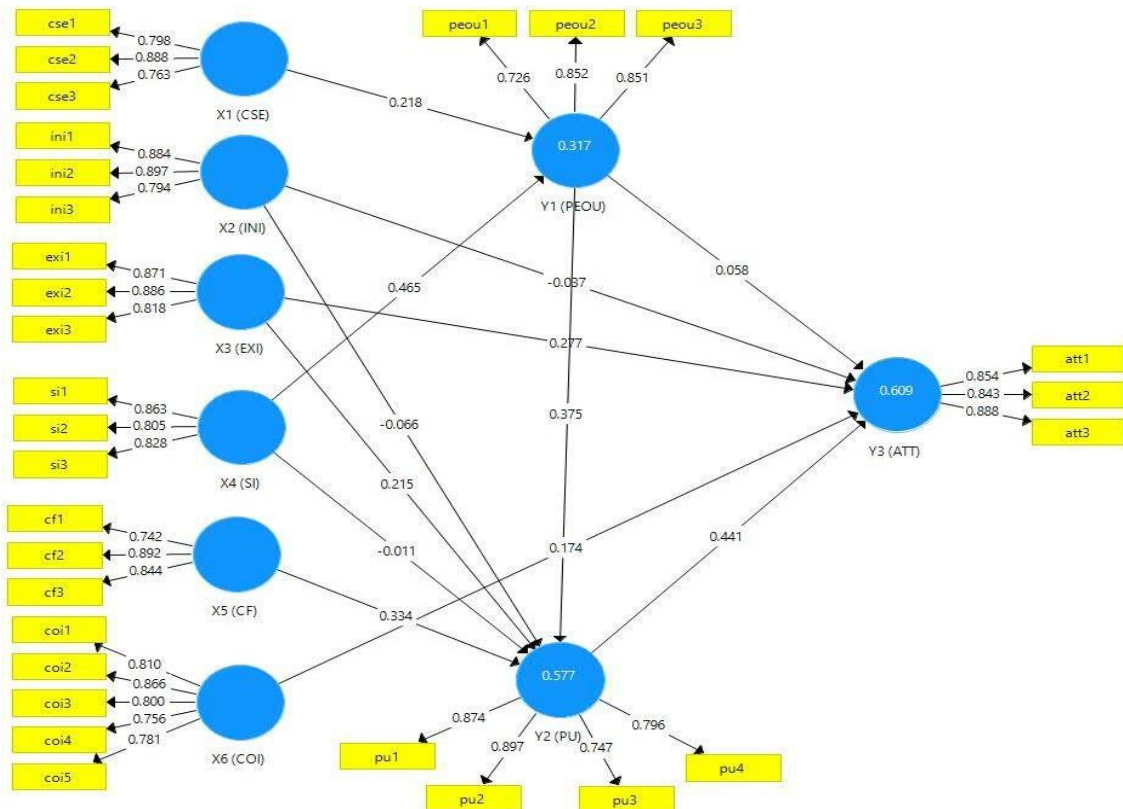


Figure 2. Path Coefficient

There is a significant effect if the significance value is below 0.05. The results above concluded that:

H1: Variable CSE (Computer self-efficacy) has an effect on the PEOU variable (perceived ease of use)

Computer self-efficacy has a significant effect on perceived ease of use with a coefficient of 0.218. The T-Statistic value is 2.781 and the P-Values is 0.006 (significance less than 0.05). The coefficient value is positive, which means that the computer self-efficacy variable has a positive effect on the perceived ease of use variable or it can be said that the better the computer self-efficacy, the higher the perceived ease of use, the lower the computer self-efficacy, the higher the perceived ease of use. use will be lower.

H2a: INI variable (interpersonal influence) affects the PU variable (perceived usefulness)
Interpersonal influence has no significant effect on perceived usefulness. This is evidenced by the T-Statistic value of 1.147 and the P-Values of 0.252 (significance greater than 0.05). This

means that the level of interpersonal influence does not determine the level of perceived usefulness.

H2b: INI variable (interpersonal influence) affects the ATT (Attitude) variable

Interpersonal influence has no significant effect on attitude. This is evidenced by the T-Statistic value of 1.147 and the P-Values of 0.252 (significance greater than 0.05). This means that the high and low interpersonal influence does not determine the high and low attitude.

H2c: Variable EXI (external influence) affects the variable PU (perceived usefulness)

External influence has a significant effect on perceived usefulness with a coefficient of 0.215. The T-Statistic value is 2.571 and the P-Values is 0.010 (significance less than 0.05). The coefficient value is positive, which means that the external influence variable has a positive effect on the perceived usefulness variable or it can be said that the better the external influence, the higher the perceived usefulness, the lower the external influence, the lower the perceived usefulness.

H2d: Variable EXI (external influence) has an effect on the variable ATT (Attitude) External influence has a significant effect on attitude with a coefficient of 0.277. The T-Statistic value is 3.651 and the P-Values is 0.000 (significance less than 0.05). The coefficient value is positive, which means that the external influence variable has a positive effect on the attitude variable or it can be said that the better the external influence, the higher the attitude, and the lower the external influence, the lower the attitude.

H3 : Variable SI (System interactivity) has an effect on variable PEOU (perceived ease of use)

System interactivity has a significant effect on perceived ease of use with a coefficient of 0.465. The T-Statistic value is 7.016 and the P-Values is 0.006 (significance less than 0.05). The coefficient value is positive, which means that the System interactivity variable has a positive effect on the perceived ease of use variable or it can be said that the better the system interactivity, the higher the perceived ease of use, the lower the system interactivity, the lower the perceived ease of use.

H4: Variable SI (System interactivity) has an effect on the variable PU (perceived usefulness).

System interactivity has no significant effect on perceived usefulness. This is evidenced by the T-Statistic value of 0.138 and the P-Values of 0.890 (significance greater than 0.05). This means that the level of system interactivity does not determine the level of perceived usefulness.

H5: Variable CF (Content feature) has an effect on the variable PU (perceived usefulness).

Content feature has a significant effect on perceived usefulness with a coefficient of 0.334. The

T-Statistic value is 4.354 and the P-Values is 0.000 (significance less than 0.05). The coefficient value is positive, which means that the feature content variable has a positive effect on the perceived usefulness variable or it can be said that the better the feature content, the higher the perceived usefulness, the lower the feature content, the lower the perceived usefulness.

H6a: Variable PEOU (perceived ease of use) affects the variable PU (perceived usefulness)
Perceived ease of use has a significant effect on perceived usefulness with a coefficient of 0.375. The T-Statistic value is 4.303 and the P-Values is 0.000 (significance less than 0.05). The coefficient value is positive, which means that the perceived ease of use variable has a positive effect on the perceived usefulness variable or it can be said that the better the perceived ease of use, the higher the perceived usefulness, the lower the feature content, the lower the perceived usefulness.

H6b: Variable PEOU (perceived ease of use) affects the variable ATT (Attitude)
Perceived ease of use has no significant effect on attitude. This is evidenced by the T-Statistic value of 0.636 and the P-Values of 0.525 (significance greater than 0.05). This means that the level of perceived ease of use does not determine the high or low attitude.

H7: The PU (perceived usefulness) variable has an effect on the ATT (Attitude) variable.
Perceived usefulness has a significant effect on attitude with a coefficient of 0.441. The T-Statistic value is 5.627 and the P-Values is 0.000 (significance less than 0.05). The coefficient value is positive, which means that the perceived usefulness variable has a positive effect on the attitude variable or it can be said that the better the perceived usefulness, the higher the attitude, the lower the perceived usefulness, the lower the attitude.

H8: Variable Col (Competence of Instructor) has a significant effect on the ATT (Attitude) variable.
Competence of Instructor has a significant effect on attitude with a coefficient of 0.174. The T-Statistic value is 2.079 and the P-Values is 0.038 (significance less than 0.05). The value of the coefficient is positive, which means that the competence of Instructor variable has a positive effect on the attitude variable or it can be said that the better the competence of Instructor, the higher the attitude, the lower the competence of Instructor, the lower the attitude.

V. DISCUSSION

Today the need for implementation of digital technologies into the education process raises no doubt at all, since the digital environment offers greater freedom of choice in learning, reducing costs for it and increasing the rate of information transfer. The digital environment also influences the development of e-learning, complementing it with new technologies and methods. A unique

feature of online learning consists in the remote interaction between the teacher and the student, which is not an obligatory criterion for e- learning. And though contemporary online education is based on the use of information telecommunication technology, it is not a criterial attribute for them. The distance (remoteness) between the teacher and the student is not a criterial attribute for e-learning as well. E-learning should be understood to mean learning with the use of information telecommunication technology, and it can involve interaction between the teacher and the students both in the online mode (synchronous learning) and in time-lagged mode (asynchronous learning or self-paced learning) [22].

However, two major problems rendered the online teaching and learning less effective than expected. One problem was arising from the institutional unpreparedness. Both lecturers and students were involved in struggling with this sudden move on global and untested scale. It was found difficult to create an interactive and effective classroom environment online due to the fact that most of the teachers and students have not been trained to teach or learn online [23]. The result of this study showed that Computer self-efficacy has a significant effect on perceived ease of use with a coefficient of 0.218. The T-Statistic value is 2.781 and the P-Values is 0.006 (significance less than 0.05). The coefficient value is positive, which means that the computer self-efficacy variable has a positive effect on the perceived ease of use variable or it can be said that the better the computer self-efficacy, the higher the perceived ease of use, the lower the computer self-efficacy, the higher the perceived ease of use. use will be lower.

The pandemic has also affected students profoundly, for example, with changing forms of contact time with staff, one-to-one discussion opportunities, assessment and feedback, physical access to campuses including teaching and living accommodation, perceptions of university fees and their value for money and cost of living. Internet connectivity appeared as the major problem faced in online examination. It may be a reason as a number of students hail from far flung/remote areas of east area of Indonesia states where Internet connectivity is still a challenge. A minor proportion of students also indicated the financial constraint for not being able to afford a laptop or a smart mobile phone. The evidence of this study show that System interactivity has a significant effect on perceived ease of use with a coefficient of 0.465. The T- Statistic value is 7.016 and the P-Values is 0.006 (significance less than 0.05). The coefficient value is positive, which means that the System interactivity variable has a positive effect on the perceived ease of use variable or it can be said that the better the system interactivity, the higher the perceived ease of use, the lower the system interactivity, the lower the perceived ease of use. There were issues in deficiencies in digital skills and infrastructure, as well as social, emotional and financial factors that impacted on their studies. However, as students found themselves living and learning off-campus, many lost not only the support from staff and peers but also access to sufficient technology and infrastructure. Such moves signified major support issues that are required to enable students to participate in effective learning,

such as peer and social support, suitable workspace at home and childcare. Many students did not have equal or sufficient access to computer hardware and Internet connections as well as digital skills. Supporting students when they are unable to adequately access those crucial services has been reported as the most difficult and often frustrating aspect of the pandemic. Additional initiatives to support students provided by the case study university included greater access to digital resources (including e-textbooks); adjustment to new digitally friendly assessment mechanisms; more asynchronous and self-guided delivery of courses and other supportive skills development workshops offered by the library, the information centres and the student support services. The evidence of this study show that Perceived ease of use has a significant effect on perceived usefulness with a coefficient of 0.375. The T-Statistic value is 4.303 and the P-Values is 0.000 (significance less than 0.05). The coefficient value is positive, which means that the perceived ease of use variable has a positive effect on the perceived usefulness variable or it can be said that the better the perceived ease of use, the higher the perceived usefulness, the lower the feature content, the lower the perceived usefulness.

Traditionally teaching has been a private activity between the instructor and their students. With the rapid transition to online, teaching became more than just about the teacher, course content and learners and included the support services. During the pandemic, team-teaching increased with faculty teams ranging from two to four members co-delivering courses previously taught by one faculty member. Team teaching enabled a blending of skillsets and mutual support through the online transition. Online teaching experiences were enriched as faculty learned and innovated together. Team teaching also brought challenges as faculty adjusted their course planning and facilitation strategies to ensure a collaborative approach in an environment where appraisals value individual achievements and outputs. The result of this study show that Competence of Instructor has a significant effect on attitude with a coefficient of 0.174. The T-Statistic value is 2.079 and the P-Values is 0.038 (significance less than 0.05). The value of the coefficient is positive, which means that the competence of Instructor variable has a positive effect on the attitude variable or it can be said that the better the competence of Instructor, the higher the attitude, the lower the competence of Instructor, the lower the attitude.

VI. CONCLUSION

To understand the student experience with technology in distance learning, our evidence signifies Computer self-efficacy (CSE) variable has an overall average of 3.39. This means that in general, respondents answered choice 3 (neutral) which means that students' abilities regarding computer self-efficacy are quite good but need to be improved. And the highest average item is item 1 (I can complete my learning activities through an online learning system even though I have never used an online learning system before) with an average of 3.61. These range from

3.39, and 3.61 respectively, measuring the satisfaction in the online course design. This upward trend of satisfaction is attributable to learners' maturity and number years of study system which is further supported by universities.

This study encourages the university committed to embedding digital content to support students in their learning by focusing on developing a range of digital skills and literacies. The priority is the development of students' skills needed, which suggests that they either enable students to present solutions to a problem (often based on data handling and analysis) or communicate gained knowledge in the format of a digital artefact (e.g. presentation, video, podcast, digi-essay). This is because of our evidence show that the System Interactivity (SI) variable has an overall average of 2.93. This means that in general, respondents answered choice 2 (not good) which means that students' abilities regarding system interactivity are still low.

The evidence gained from these surveys was significant in helping to lead transformation initiatives in digital learning and the services offered to students. This included development of new digital learning approaches, improvements to services and digital provision (software, hardware and the learning environment), lecture recording systems, guidance about the effective use of students' own digital devices, quality of digital teaching on courses and in digital security and online behaviour. The evidence showed that Computer content feature (CF) variable has an overall average of 3.13. This means that respondents answered choice 3 (neutral) which means that students' abilities regarding feature content are quite good but need to be improved. The highest average item is item 1 (current course content has been redesigned to match the online learning system during the Covid-19 period) with an average of 3.28. Perceived ease of use (PEOU) variable has an overall average of 3.18. This means that in general respondents answered choice 3 (neutral) which means that the students' ability regarding perceived ease of use is good enough but needs to be improved. The highest average item is item 2 (I found the online learning system easy to use.) with an average of 3.36.

Recommendations

Simultaneously, faculty development and creating a cohesive community of practice across and within faculties were imperative. Acknowledging and embedding the roles of support staff and departments has empowered and created a new generation of leaders committed to the mandate reimaged within the digital ecosystem. Initiatives, such as "Digital Champions" schemes, were introduced across the higher education sector to enable academics with greater knowledge and experience of using digital tools support their colleagues. These champions tend to be trained and supported by academic development teams and institutional learning technologists. At the case study university, "Faculty Digital Champions" were appointed with a role including augmenting the support on offer to teaching; improving two-way coordination across departments and across staff; sharing "good" or "best" practice and expanding skills development

and support amongst staff.

The pandemic has affected students profoundly, for example, with changing forms of contact time with staff, one-to-one discussion opportunities, assessment and feedback, physical access to campuses including teaching and living accommodation, perceptions of university fees and their value for money and cost of living. Overall, these have affected students in terms of their experiences of learning, social activities, social support, especially from peers and individual physical and mental health. The COVID-19 pandemic has forced university leaders, academics, technologists and support staff to consider the practicalities of operating in a fully digital space. Switching to a fully online mode of study required a substantial adjustment and a greater responsibility and engagement in learning. However, as students found themselves living and learning off-campus, many lost not only the support from staff and peers but also access to sufficient technology and infrastructure. Such moves signified major support issues that are required to enable students to participate in effective learning, such as peer and social support, suitable workspace at home. Supporting students when they are unable to adequately access those crucial services has been reported as the most difficult and often frustrating aspect of the pandemic. Additional initiatives to support students provided by the case study university included greater access to digital resources (including e-textbooks); adjustment to new digitally friendly assessment mechanisms; more asynchronous and self-guided delivery of courses and other supportive skills development workshops offered by the library, the information center and the student support services (to include videos on how to use VLEs). Additional online support was available for students self-isolating, to avoid contagion of the coronavirus, including access to psychological help, counselling and social support (e.g. a buddy system).

Based on this study, the teachers will be able to identify the problems they will face while conducting online classes and assessments. They will be able to equip themselves better and can strategize their efforts by enrolling in those courses which provide training for conducting online teaching and assessment. Teachers need to regularly update their technical knowledge. Universities can also support their teachers by providing training related to technology and education and providing funds for enrolling in courses that focus on online teaching perspectives. The development of course-specific online teaching and assessment plans is a gateway for the strategic execution of technology in the classroom. Online teaching and assessment will reduce paper usage and will contribute to environmental sustainability; it will increase digital literacy among teachers and students which will increase their exposure and learning and making them more employable for the digital world-leading thereby contributing to social sustainability. All these efforts will contribute to economic sustainability by reducing unemployment and contributing to economic growth and development.

A collaboration of government, technology companies and higher education institutes in the mode of public, private companies, higher education institutes partnership can solve the

problem of technical infrastructure. Investing in institutional-supported technologies is a costly venture for universities, Government financial support will reduce the burden on the institution and motivate them to adopt technology online teaching and assessments.

Limitation and future scope

The scope of this study is limited to the TAM Approach, where Computer self-efficacy (CSE) variable affects the perceived ease of use (PEOU) variable, the interpersonal influence (INI) variable affects the perceived ease of use (PEOU) variable, the interpersonal influence (INI) variable affects the external influence (EXI) variable, the external influence (EXI) variable effects the perceived usefulness (PU) variable, the external influence (EXI) variable affects the external influence (EXI) variable, the System interactivity (SI) variable affects the perceived ease of use (PEOU) variable, and the System interactivity (SI) variable affects the perceived usefulness (PU) variable. Further work would also be required to establish whether there is a causal relationship with another approaches. Also, the participants from the 14 universities with 176 respondents are only represent a small sample of the full number of students in Indonesia involved in design and course creation, and the impact of their exact roles, age, gender and prior experience on their responses were not controlled for here.

There are gaps to be addressed in relation to necessary skills and infrastructure and overcoming existing and new social and digital divides. The COVID-19 crisis helped highlight and accelerate such issues. A major implication of this paper is that, while there is a clear need for universities to actively lead and support the development of digital skills and the digital competencies of staff and students, this requires a better understanding of the challenges and unintended consequences that digital learning and working poses. Research in this area is urgently required to ensure that the emerging digitalization of universities follows and extends best practices in the interests of educators, learners and society. Research is also required into how universities and other stakeholders respond to such complexities and the potential long-term consequences of digitalization and online learning and working and recognize how these may affect the future of universities and alter the nature of higher education.

VII. REFERENCES

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