

USING AN EXTENDED TECHNOLOGY ACCEPTANCE MODEL TO EXPLORE STUDENTS' USE AND FATIGUE OF VIDEO CONFERENCE ONLINE LEARNING DURING COVID-19 IN INDONESIA

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ABSTRACT

This research explores factors in the utilization of online learning processes due to the COVID-19 pandemic in 2020. The paper encompasses the pandemic circumstance in one of the top 10 universities in Indonesia. This research mainly explores the effect of Experience, Enjoyment, Facilitating Condition, and Self-Efficacy on students' acceptance of shifting education to video conference-based online learning. In addition to the main factor, this research also investigates the moderating effect of video conference fatigue trends, such as Motivational, Emotional, Visual, and Social Fatigue. The framework used in the study is based on an adapted General Extended Technology Acceptance Model for E-Learning (GETAMEL) in the COVID-19 pandemic circumstances. The study found that enjoyment was the most significant predictor of students' acceptance. Meanwhile, Perceived Ease of Use and Perceived Usefulness also predict students' Attitude Towards Using and Intention to Use. Regarding the investigation of video conference fatigue, the research found no significant impact of fatigue that affects the relationship between Actual use and Intention to Use. The discoveries further develop an understanding regarding the acceptance of video conference-based online learning. Therefore, this research can be an interest to university and education professionals.

Keywords: *Online learning, Video Conference, E-TAM, Fatigue, COVID-19, pandemic*

INTRODUCTION

The COVID 19 pandemic in Indonesia began in March 2020 among active victims in Depok City. With the increasing number of cases throughout the Jabodetabek region, the National Disaster Management Agency (BNPB) issued Decree No. 13A to determine the emergency period due to COVID-19. In response, the Ministry of Education and Culture (Kemendikbud) issued a circular from the Ministry of Education and Culture on 17 March 2020, 36962 / MPK. A / HK / 2020, which contains: Prevention of Coronavirus Disease (COVID-19). As learning is at the core of the educational process, learning quality describes the quality of education. Therefore, the quality of education can be improved by improving the quality of learning. With the new learning mechanism, lecturers must switch their behavior to online learning and work at home to teach students. Online Learning aims to enhance the quality of education and relevance, improve equitable access to opportunities, and expand educational opportunities. Online education with good quality assurance and organized under the needs of stakeholders is one of the mechanisms for increasing access to higher education.

XYZ University has its online learning program running and implementing online learning methods. Before the pandemic, the Learning System used at XYZ University was done face to face. Regular students also use the Online Learning System for asynchronous purposes but do Class activities face-to-face according to the schedule listed. Therefore, this study will be prioritized at regular undergraduates who have never previously conducted classes in a video conference, whereas 37,604 undergraduate students of XYZ University must carry out fully online teaching and learning activities through video conference. However, students who

previously conducted classes through face-to-face classes were also accepted.

This research aims to understand the acceptance of XYZ University undergraduate students in the Faculty of Economics and Communication, School of Design, Faculty of Humanities, School of Business Management, and Faculty of Engineering. The selection of respondents in this research is based on faculty who do not study computer systems due to experience. A user who has knowledge and expertise in skills related to computer technology will have a more positive feeling towards the use of any online learning system [1]. Therefore, to examine more deeply the impact of Covid 19, students who have no background or are in Faculty about computers or ICT are not included in the research. XYZ University students with faculty unrelated to ICT learning feel the impact of covid-19 based on Higher Education Database is about 20,237 students.

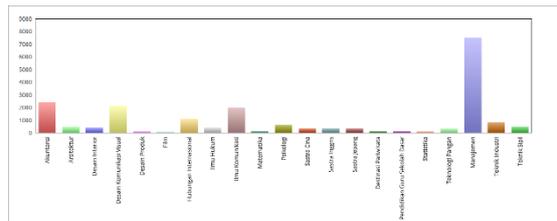


Figure 1: Undergraduate Student of XYZ University with non-ICT related faculty

Other than knowing the base factors used in GETAMEL, this research promotes new factors to be considered. The research related to fatigue in video conferences for online learning, especially since the COVID-19 pandemic, is still limited. Nadler explained that video conference fatigue is not coming from purely staring at a screen. In contrast, it is a behavior we engage in before the pandemic. However, the complexity of interpersonal interactions is because of the particular spatial elements in video conferences [2]. This research also aims to test the video conferences exhaustion & fatigue and its scale, which significantly could be integrated to test the student acceptance of Online Learning. A study from [3] examines the limited academic research mechanisms and the psychological effects, and scholars need tools to understand this drastically, especially for video conferences. Fauville developed a scale to provide a valid and reliable measure for video conferences fatigue. It will show whether fatigue of Video Conference in XYZ University has a significant impact on Actual Usage of the Online Learning System.

LITERATURE REVIEW AND RESEARCH FRAMEWORK

In the study by [1], the most used external factors in more than 107 studies using TAM were Self Efficacy, Subjective Norm, Enjoyment, Computer Anxiety, and Experience. In addition, all studies using external factors for various types of e-learning technology and e-learning user types found that the above variables were analyzed to demonstrate the strength of the relationship between external factors with PEOU and PU students from online learning systems.

Based on the findings, the most significant predictors of PEOU students of online learning are Self-Efficacy ($\beta = 0.352$), Enjoyment ($\beta = 0.341$), Experience ($\beta = 0.221$), Computer Anxiety ($\beta = -0.199$), and Subjective Norm ($\beta = 0.195$). On the other hand, the most significant predictors of Perceived Usefulness of a student's online learning are Enjoyment ($\beta = 0.452$), Subjective Norms ($\beta = 0.301$), Self-Efficacy ($\beta = 0.174$), and Experience ($\beta = 0.169$). Based on the relationships between the five most utilized external factors and PEOU and PU students of online learning, a model, GETAMEL, was proposed to identify critical external factors for e-learning acceptance.

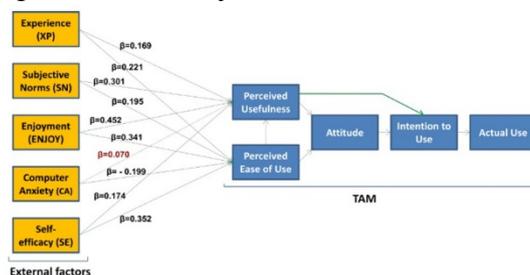


Figure 2: Undergraduate Student of XYZ University with non-ICT related faculty

Actual Use

Actual use is a natural behaviour in adopting a system. An actual system is an external psychomotor reaction measured by an individual with actual or real use [4]. Being the endpoint of technology acceptance, the AU does not influence other constructs in this model. In this study, the actual use of video conferences in online learning is the endpoint of the measurement.

Intention Use

User intentions are an individual's desire to perform a particular behavior [4]. The intention is an individual's desire to serve specific behaviours or an individual's tendency to continue utilizing certain technologies. A person's use of technology can be predicted by his attitude towards technology, for example, his motivation to continue using or motivating other uses or adding support equipment [1]. In online learning activities, the user intention to use video conferences as a media for learning was needed to form an actual use of the system. Therefore, a hypothesis can be formed:

H1: Intention to Use (ITU) positively affects Actual Use (AU)

Attitude Toward Using

Attitude toward use can be described as positive or negative feelings or sentiments that a person has regarding certain behaviours [4]. The TAM model mentions attitudes affect intentions and are affected by ease of use and usability. Additionally [5] showed that some studies showed that attitudes positively affected intentions, but other studies showed no significant effect on intentions. In online learning activities, user sentiments of video conferences as a media for learning will form the desire to use the system. Therefore, a hypothesis can be formed:

H2: Attitude Towards Using (ATU) positively affects Intention to Use (ITU)

Perceived Ease of Use (PEOU)

Perceived Ease of Use could be described as the degree to which a user speculates that systems are easy to use and without excessive effort [4]. Based on the definition, it can also be explained that if a person feels and think that a system is easy to use, they intend to use the system. If one believes that a system is hard to use, one will not use it. Based on the TAM concept, the Perceived Ease of Use is one of the predictors of users' attitudes towards using technology. When users feel that the system is easy to use and useful, they will accept the technology without any issue. In online learning activities, the ease of use of video conferences must be felt, leading to a positive attitude of using technology and being useful for learning activities. Previous studies regarding the acceptance of online learning stated that perceived ease of use was significant in predicting attitude [6], [7]. Therefore, the hypothesis can be formed:

H3: Perceived Ease of Use (PEOU) positively affects Perceived Usefulness (PU)

H4: Perceived Ease of Use (PEOU) positively affects Attitude Toward Using (ATU)

Perceived Usefulness (PU)

Perceived Usefulness can be described as the degree to which a user speculates that systems can improve their performance (Davis, 1989). Based on the definition, it can also be explained that if a person feels and thinks that a system is useful, they intend to use it. If one believes that a system is less useful, he will not use the system. The perceived usefulness is how much a user who uses a system speculates it would increase their studies compared to other methods. This variable affect user's decision on whether to accept or reject technology. Following the original TAM, Perceived Usefulness affects Attitude Towards Using and Intention to Use technology. In the case of online learning, students had to switch their learning method because of the pandemic; therefore, the following hypotheses were formulated :

H5: Perceived Usefulness (PU) positively affects Intention to Use (ITU)

H6: Perceived Usefulness (PU) positively affects Attitude Toward Using (ATU)

Self-Efficacy (SE)

Self-Efficacy can be described as an individual's estimation of their ability to perform a particular task using a computer ([1]. Based on the definition, it can also be explained that an individual who believes in their abilities will be confident enough to overcome the obstacles that arise when using a computer. Based on research [8]–[10] that examines the effect of Self-Efficacy on users' Perceived Ease of Use of e-learning, users need to be confident enough to use video conferences for their learning activity. Therefore, the hypothesis can be formed:

H7: Self Efficacy (SE) positively affects perceived ease of use (PEOU)

H8: Self Efficacy (SE) positively affects Perceived Usefulness (PU)

Experience (EX)

Experience can be described as the personal accumulated skills over time with a computer. The experience was the most utilized and affirmed external variable of TAM among 152 distinct external variables in the 107 studies [1] Based on the definition, it can also be explained that experience affects users' perception in receiving and using a system. Studies regarding e-learning confirmed that Experience affected both learners' Perceived Ease of Use [10]–[12] and Perceived Usefulness [12], [13]. As the personal experience of using computers affects PU and PEOU, video conferences based on online learning as a new online learning media need to be further studied. Therefore, the hypothesis can be formed:

H9: Experience (EX) positively affects perceived ease of use (PEOU)

H10: Experience (EX) positively affects Perceived Usefulness (PU)

Facilitating Condition (FC)

Facilitating conditions refer to students' access to technology resources for e-learning activities. Content options [14] have given students freedom that appropriate structure and design has allowed them to take an active role in their learning by getting and choosing their preferred web resources, planning and conducting learning activities designing content for their learning environment. Two previous studies by [7], [15] confirmed that facilitating conditions are insignificant predictors of perceived usefulness. As video conferences are a new online learning media, further studies were needed. Therefore, the hypothesis was formed:

H11: Facilitating Condition (FC) affects perceived ease of use (PEOU)

H12: Facilitating Condition (FC) affects Perceived Usefulness (PU)

Enjoyment (EN)

Based on GETAMEL, Enjoyment (EN) is described as the degree to which activity in any system is considered pleasurable, aside from the consequences of utilizing the system. Research [1] found when the system is fun, it can be considered the system were easy to use and useful, and the intention of its users to implement the technology is higher. Many studies have shown that the pleasure of using any system influence the perceived ease of use. Researchers also found a significant relationship between the Enjoyment and Perceived Usefulness on Online learning, whereas increases students' intention to use [16]. As enjoyment is studied further with the context of online learning adoption [8], [17], [18], the evidence found that the higher levels of online learning enjoyment lead to better acceptance. As video conferences are a new online learning media, further studies were needed. Therefore, the hypothesis was formed:

H13: Enjoyment (EN) affects perceived ease of use (PEOU)

H14: Enjoyment (EN) affects Perceived Usefulness (PU)

Motivational Fatigue (MF)

Motivation is frequently described as being supported by cost-benefit evaluations, considering the effort costs, the impact was on individual motivation, and levels of activity [19]. Hypothetically, effort costs limit the value of rewards and thus their refreshing and incentivizing effect. Therefore, when less motivated, people devalue rewards more than when motivated. For example, this may happen in the case of video conferences from online learning, as the student

feels that the impact gained from online learning is not significant; this will devalue their effort and result in less motivation to join the online classes. Based on that logic, therefore, a hypothesis can be formed:

H15: Motivational Fatigue (MF) affects the relationship between Intention To Use (ITU) and Actual Use (AU)

Visual Fatigue (VF)

The National Research Council Committee describes visual fatigue as “any subjective visual symptom or distress resulting from use of one’s eyes” [20]. It is estimated by [21] with “my vision seems blurry” items. In the case of Video conferences, the long duration of the class may result in a significant amount of visual fatigue such as irritation and dry eyes. Therefore, a hypothesis can be formed:

H16: Visual Fatigue (MF) affects the relationship between Intention to Use (ITU) and Actual Use (AU)

Emotional Fatigue (EF)

Emotional fatigue is a constant physical and emotional deficiency resulting from enormous work demands and constant inconvenience [22]–[24]. The research by Wright & Cropanzano describes that emotional fatigue is being emotionally overextended and exhausted. It is manifested by both physical fatigue and a psychological and emotional "drained" sensation. Depersonalization, also called "dehumanization," can be understood as social service occupations in which burnout has been most frequently examined. Depersonalization refers to a set of callous and insensitive behaviors that are displayed. In the case of video conferences as new online learning media, the long duration of video conferences and the lack of human physical interaction, and the need to be emotionally ready at any time for both video conferences and work may result in emotional fatigue. Therefore, a hypothesis can be formed:

H17: Emotional Fatigue (MF) affects the relationship between Intention To Use (ITU) and Actual Use (AU)

Emotional Fatigue (EF)

Social Fatigue in video conferences can regularly feel like a packed or overcrowded environment. An overcrowded environment could cause a social over-burden. Social overload refers to the state wherein individuals perceive that they must respond to the excessive social support demands on social media [25]. Therefore, a hypothesis can be formed:

H18: Social Fatigue (MF) affects the relationship between Intention To Use (ITU) and Actual Use (AU)

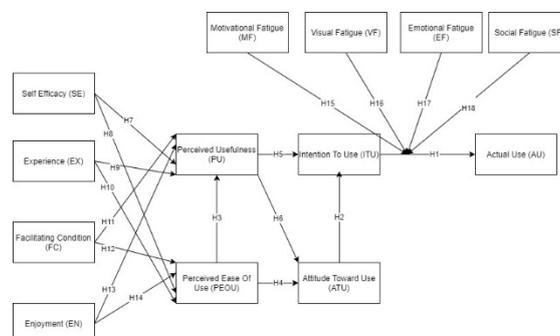


Figure 3: Research Framework

Figure 3 shows the framework for this research regarding the acceptance of video conference online learning. The model is adapted from [1] and from [3] was initially presented as a General Extended Technology Acceptance Model for E-Learning (GETAMEL). For this research, the model of GETAMEL was used as the basis with some modifications. Namely, the variable of subjective norms (SN) construct and computer anxiety (CA) due to the character of

online classes in the COVID-19 pandemic are eliminated from the model. While the two variables are eliminated, this research inserts a highly used variable in TAM research: Facilitating Condition (FC). This is due to pandemic research on whether the student is ready to use video conferences from their respective place crucial. The developed model combines the Technology Acceptance Model (TAM) with external factors. The study also modifies and adds a new mediating variable as new research emerged on Video conference Fatigue. Based on the research done by Fauville, four new constructs were added to explore whether fatigue has a significant effect on the relationship between actual use and intention to use. Fatigue consists of Emotional Fatigue (MF), Visual Fatigue (VF), Emotional Fatigue (EF), and Social Fatigue (SF). All the constructs have reflectively described the measurement models with three to four items in construct measurement. The Actual Use draws on a single-item construct measurement.

RESEARCH METHODS

Data and Demographics Profile

The data for the research was collected using Google Forms, siand the questionnaires were trialed on a minuscule sample of respondents through cycles of interviews. After the questions were tested and adjusted, the questionnaire was sent to students from the University XYZ in Accounting, Management, Design and Visual Communication, and Communication departments. Non-probability sampling and purposive judgemental sampling were used in this research with a 5-point Likert scale. The following table 1 provides the detail and the structure of the respondents. The data collection was done from 05 September 2021 to 10 October 2021, and 209 respondents were obtained. After removing incomplete and biased responses, 207 questionnaires were fit for further analysis.

Table 1: RESPONDENTS PROFILE

Characteristics	Distributions	Frequencies
Faculty	Management	102
	Accounting	71
	Design and Visual Communication	11
	Communication	22
Semester	1-2	114
	3-4	76
	5-6	9
	7-8	7
	Above 8	1
Gender	Male	90
	Female	117
Age	17 below	15
	18-20	186
	21-24	5

Analytical Approach

This research follows the direction of [26], using the PLS-SEM approach to analyze the data of this study. Structural equation modeling (SEM) is a set of techniques for exploring the relationship between variables. PLS-SEM is a method of causation to test the relationship between a variable. Analyzing data using SEM-PLS takes a useful model path so that the diagram can display hypotheses and variable relationships to be tested. The tool that was used to calculate the data collected is SmartPLS 3.0.

RESEARCH RESULTS AND DISCUSSION

Outer Model

Validity test and reliability test are conducted on questions used to determine the quality of each question posed. The test consisted of 207 samples that were calculated using smartPLS software. Convergent Validity is used to measure the extent of positive correlations. To establish a convergent validity relationship, the outer loading value Average Variance Extracted (AVE) values must be met. A variable is valid if the value in average variance extracted (AVE) is above 0.5, and the acceptable outer loading value is 0.7 for each indicator; if the condition is not met, the indicator needs to be removed [27]. Table 2 shows the outer loading value and the AVE, whereas three indicators don't meet the requirement for further steps; therefore, the indicators were removed.

To evaluate the result reliability, Cronbach's Alpha was used. The value of Cronbach's Alpha of 0.6-0.7 is considered acceptable, and 0.7-0.9 [26] is satisfied. Table 2 shows the value of Cronbach's Alpha, and all of the variables fit the criteria.

Table 2: Reliability and Validity Constructs

Variables	α	CR
Actual Use	1,000	1,000
Perceived Usefulness	0.807	0.874
Perceived Ease of Use	0.853	0.902
Attitude Towards Using	0.779	0.872
Intention To Use	0.734	0.847
Experience	0.81	0.887
Enjoyment	0.844	0.906
Self-Efficacy	0.833	0.9
Facilitating Condition	0.867	0.938

Inner Structural Model

In smartPLS, bootstrapping with a subsample of five thousand was used to obtain t-statistics and p-value. Table 4 reports the result of the inner structural model. This study proposes a positive effect of Intention to Use towards Actual Use (H1), Attitude Towards Use towards Intention to Use (H2), Perceived Ease of Use towards Perceived Usefulness (H3), Perceived Ease of Use towards Attitude Towards Use (H4), Perceived Usefulness towards Intention to Use (H5), Perceived Usefulness towards Attitude Towards Use (H6), Perceived Compatibility (H7) Self-Efficacy towards Perceived Usefulness and Perceived Ease Of Use (H7) and (H8), Experience towards Perceived Usefulness and Perceived Ease Of Use (H9) and (H10), Facilitating Condition towards Perceived Usefulness and Perceived Ease Of Use (H11) and (H12), Enjoyment towards Perceived Usefulness and Perceived Ease Of Use (H13) and (H14), Motivational Fatigue Moderating Effect (H15), Visual Fatigue Moderating Effect (H16) Emotional fatigue Moderating Effect (H17), and Social Fatigue Moderating Effect (H18), towards Actual Use. Based on table 4, with a significance level of 0.5, the t-value must be larger than 1.96 and p-value less than 0.05; the report shows that 8 out of 18 hypotheses were accepted, and 10 were rejected.

Table 3: PATH COEFFICIENT

H		O	T Statistics	P Values	Decision
1	Intention to Use -> Actual Use	0.521	9,466	0	Supported
2	Attitude Towards Use -> Intention to Use	0.637	8,014	0	Supported

3	Perceived Ease of Use -> Perceived Usefulness	0.512	7,874	0	Supported
4	Perceived Ease of Use -> Attitude Towards Use	0.385	6,014	0	Supported
5	Perceived Usefulness -> Intention to Use	0.064	0.734	0.463	Rejected
6	Perceived Usefulness -> Attitude Towards Use	0.437	7,404	0	Supported
7	Self-Efficacy -> Perceived Usefulness	0.038	0.586	0.558	Rejected
8	Self-Efficacy -> Perceived Ease of Use	0.089	1,115	0.265	Rejected
9	Experience -> Perceived Ease of Use	0.067	0.912	0.362	Rejected
10	Experience -> Perceived Usefulness	-0.013	0.196	0.845	Rejected
11	Facilitating Condition -> Perceived Ease of Use	0.137	2,191	0.028	Supported
12	Facilitating Condition -> Perceived Usefulness	0.069	1,279	0.201	Rejected
13	Enjoyment -> Perceived Ease of Use	0.496	6,349	0	Supported
14	Enjoyment -> Perceived Usefulness	0.267	3,130	0.002	Supported
15	Motivational Moderating Effect -> Actual Use	-0.007	0.07	0.944	Rejected
16	Visual Fatigue Moderating Effect -> Actual Use	-0.055	0.789	0.43	Rejected
17	Emotional Fatigue Moderating Effect -> Actual Use	-0.046	0.487	0.626	Rejected
18	Social Fatigue Moderating Effect -> Actual Use	0.131	1,210	0.226	Rejected

Findings

Lastly, for all the Fatigue Moderating Variables such as Motivation, Emotional, Social, and Visual, all hypotheses are rejected due to the respondents' feelings about the online learning implemented by the university. An open question asking about the student's satisfaction with the online learning was done after the survey; out of 207 valid respondents, only four wrote not satisfied, and 12 wrote less satisfied. This shows that only 7.7% of respondents are not satisfied, while 93% are satisfied with the current online learning through video conference lessons. Based on that, it can be assumed that students' fatigue doesn't significantly affect the use of video conferences for online learning. It is no different in students' fatigues compared to before the COVID-19 pandemic.

Implications

This research study demonstrates the effectiveness of GETAMEL in explaining and identifying factors that influence students' perceptions, Attitude toward use, Intention to Use, and Actual use as a single item construct in the online learning video conference system in XYZ Universities. The research discovered a significant positive relationship between the following constructs as hypothesized:

- Intention to Use and Actual Use
- Attitude Towards Use and Intention to Use
- Perceived Ease of Use and Perceived Usefulness
- Perceived Ease of Use and Attitude Towards Use
- Perceived Usefulness and Attitude Towards Use
- Facilitating Condition and Perceived Ease of Use
- Enjoyment and Perceived Ease of Use
- Enjoyment and Perceived Usefulness

To further validate or authenticate these variables' importance in affecting online learning adoption, future research should consider these factors when investigating online learning adoption, especially in the video conference context of research. With some inconsistent with many past studies, this study discovered no significant positive relationship between the following constructs:

- Perceived Usefulness and Intention to Use
- Self-Efficacy and Perceived Usefulness
- Self-Efficacy and Perceived Ease of Use
- Experience and Perceived Ease of Use
- Experience and Perceived Usefulness
- Facilitating Condition and Perceived Usefulness

A new contribution to the base model of the GETAMEL factor that emerges from the trend of video conference usage is the fatigue that may occur during online learning activities. Based on the research done by [35], a scale to test the Zoom fatigue or Video Conference is generated to understand video conferences influence interpersonal communication. The result shows fatigue moderating variables to actual use shows no relation that affects the usage of the video conference-based online learning in XYZ university.

Limitations

This research has some limitations that could be considered in future research. First, this study takes one of the top 10 universities in Indonesia. The universities are well known as the university that offers a developed Learning Management System; therefore, the university is facing the pandemic COVID-19 have a good response and operability. Based on the answer to the open question, the data shows that most undergraduate students who have done Video conference classes feel satisfied with the current system. The respondent mainly consists of the first-second semester and third-fourth semester. As the student level has not attended a face-to-face class; therefore, the perception of a collage on the difference of face-to-face with Online class could not be considered. Second, this study has value despite its limitations as the findings

provided several important implications for educators and video conference online-learning development.

CONCLUSION

This research was conducted on one of the top 10 universities in Indonesia, whereas undergraduate students were taken as the respondents. As the COVID-19 outbreak happened worldwide, universities shifted their face-to-face learning to online learning. Therefore, this research analyzes students' acceptance of video conference-based online learning technology that the university applies. It was discovered that students have a highly moderate feeling that video conference in online learning has enhanced their learning effectiveness and productivity. Mainly their enjoyment with online learning is also one of the most influential factors. Students also consider online learning with video conference to be very satisfying. They are generally ready to operate an online class with all the facilitating conditions; they intend to use video conference online often learning in their semester. However, this work has limitations, whereas the research has only been done in one university in a single country. Therefore, acknowledgment of comparative research would be needed to get a more comprehensive picture of the impact of the pandemic, especially on higher education.

REFERENCE

- F. Abdullah, R. Ward, and E. Ahmed, "Investigating the influence of the most commonly used external variables of TAM on students' Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) of e-portfolios," *Comput. Human Behav.*, vol. 63, pp. 75–90, 2016, doi: 10.1016/j.chb.2016.05.014.
- R. Nadler, "Understanding 'Zoom fatigue': Theorizing spatial dynamics as third skins in computer-mediated communication," *Comput. Compos.*, vol. 58, p. 102613, 2020, doi: 10.1016/j.compcom.2020.102613.
- G. Fauville, M. Luo, A. C. M. Queiroz, J. N. Bailenson, and J. Hancock, "Nonverbal Mechanisms Predict Zoom Fatigue and Explain Why Women Experience Higher Levels than Men," *SSRN Electron. J.*, pp. 1–18, 2021, doi: 10.2139/ssrn.3820035.
- F. Davis, *Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology*. MIS Quarterly, 1989.
- H. Jogiyanto, *Sistem informasi keperilakuan*, xix. Yogyakarta: Andi Offset, 2007.
- C. Buabeng-Andoh, W. Yaokumah, and A. Tarhini, "Investigating students' intentions to use ICT: A comparison of theoretical models," *Educ. Inf. Technol.*, vol. 24, pp. 1–18, Jan. 2019, doi: 10.1007/s10639-018-9796-1.
- M. Muhaimin, A. Habibi, A. Mukminin, R. Pratama, A. Asrial, and H. Harja, "Predicting factors affecting intention to use web 2.0 in learning: Evidence from science education," *J. Balt. Sci. Educ.*, vol. 18, pp. 595–606, Aug. 2019, doi: 10.33225/jbse/19.18.595.
- S. S. Al-Gahtani, "Empirical investigation of e-learning acceptance and assimilation: A structural equation model," *Appl. Comput. Informatics*, vol. 12, no. 1, pp. 27–50, 2016, doi: <https://doi.org/10.1016/j.aci.2014.09.001>.
- A. Ali, M. Iftikhar, S. Nadeem, A. Subhani, and C. Pohlke, "Ali et al (2013). Phylogenetic Analysis of Peste des petits ruminants Virus Short Communication ARTICLE HISTORY ABSTRACT," *Adv. Anim. Vet. Sci.*, vol. 1, pp. 32–34, Apr. 2013.
- Y. H. Lee, Y. C. Hsieh, and Y. H. Chen, "An investigation of employees' use of e-learning systems: Applying the technology acceptance model," *Behav. Inf. Technol.*, vol. 32, no. 2, pp. 173–189, 2013, doi: 10.1080/0144929X.2011.577190.
- C. De Smet, J. Bourgonjon, B. De Wever, T. Schellens, and M. Valcke, "Researching instructional use and the technology acceptance of learning management systems by secondary school teachers," *Comput. Educ.*, vol. 58, no. 2, pp. 688–696, 2012, doi: 10.1016/j.compedu.2011.09.013.

- S. H. Purnomo and Y. H. Lee, "E-learning adoption in the banking workplace in Indonesia: An empirical study," *Inf. Dev.*, vol. 29, no. 2, pp. 138–153, 2013, doi: 10.1177/0266666912448258.
- S. Rezaei and M. Amin, "Exploring online repurchase behavioural intention of university students in Malaysia," *J. Glob. Bus. Adv.*, vol. 6, no. 2, pp. 92–119, 2013, doi: 10.1504/JGBA.2013.053561.
- E. Rahimi, J. Van Den Berg, and W. Veen, "Facilitating student-driven constructing of learning environments using Web 2.0 personal learning environments," *Comput. Educ.*, vol. 81, pp. 235–246, 2015, doi: 10.1016/j.compedu.2014.10.012.
- F. Huang, T. Teo, and M. Zhou, "Factors Affecting Chinese English as a Foreign Language Teachers' Technology Acceptance: A Qualitative Study," *J. Educ. Comput. Res.*, vol. 57, p. 073563311774616, Dec. 2017, doi: 10.1177/0735633117746168.
- M. Rizun and A. Strzelecki, "Students' acceptance of the covid-19 impact on shifting higher education to distance learning in Poland," *Int. J. Environ. Res. Public Health*, vol. 17, no. 18, pp. 1–19, 2020, doi: 10.3390/ijerph17186468.
- A. Alammary, J. Sheard, and A. Carbone, "Blended learning in higher education: Three different design approaches," *Australas. J. Educ. Technol.*, vol. 30, no. 4, pp. 440–454, 2014, doi: 10.14742/ajet.693.
- H. Zare and S. Yazdanparast, "The causal model of effective factors on intention to use of information technology among payam noor and traditional universities students," *Life Sci. J.*, vol. 10, pp. 46–50, Jan. 2013.
- T. Müller and M. A. J. Apps, "Motivational fatigue: A neurocognitive framework for the impact of effortful exertion on subsequent motivation," *Neuropsychologia*, vol. 123, pp. 141–151, 2019, doi: 10.1016/j.neuropsychologia.2018.04.030.
- N. R. C. (US) P. on I. of V. V. on V. of Workers, *Video Displays, Work, and Vision*. Washington (DC), 1983.
- R. A. Tyrrell and H. W. Leibowitz, "The relation of vergence effort to reports of visual fatigue following prolonged near work.," *Human Factors*, vol. 32, no. 3. Human Factors & Ergonomics Society, US, pp. 341–357, 1990.
- T. A. Wright and R. Cropanzano, "Emotional exhaustion as a predictor of job performance and voluntary turnover," *J. Appl. Psychol.*, vol. 83, no. 3, pp. 486–493, 1998, doi: 10.1037/0021-9010.83.3.486.
- H. Qiao and W. B. Schaufeli, "The Convergent Validity of Four Burnout Measures in a Chinese Sample: A Confirmatory Factor-Analytic Approach," *Appl. Psychol.*, vol. 60, no. 1, pp. 87–111, 2011, doi: 10.1111/j.1464-0597.2010.00428.x.
- D. Zohar, "Predicting burnout with a hassle-based measure of role demands," *J. Organ. Behav.*, vol. 18, no. 2, pp. 101–115, 1997, doi: 10.1002/(SICI)1099-1379(199703)18:2<101::AID-JOB788>3.0.CO;2-Y.
- C. Maier, S. Laumer, C. Weinert, and T. Weitzel, "The effects of technostress and switching stress on discontinued use of social networking services: A study of Facebook use," *Inf. Syst. J.*, vol. 25, no. 3, pp. 275–308, 2015, doi: 10.1111/isj.12068.
- J. F. Hair, G. T. M. Hult, R. Christian, and M. Sarstedt, "A primer on partial least squares structural equation modeling (PLS-SEM)," *Int. J. Res. Method Educ.*, vol. 38, no. 2, pp. 220–221, 2015, doi: 10.1080/1743727x.2015.1005806.
- I. Ghozali, *SEM Metode Alternatif dengan menggunakan Partial Least Squares (PLS)*. Semarang: Badan Penerbit Universitas Diponegoro, 2014.
- V. Venkatesh and H. Bala, "Technology Acceptance Model 3 and a Research Agenda on Interventions; Decision Sciences, Vol. 39 (2) pp 273 – 315.," *Decis. Sci. Inst.*, vol. 39, no. 2, pp. 273–315, 2008.
- A. Al-Aulamie, A. Mansour, H. Daly, and O. Adjei, "The effect of intrinsic motivation on learners' behavioural intention to use e-learning systems," 2012 *Int. Conf. Inf. Technol. Based High. Educ. Training, ITHET 2012*, pp. 5–8, 2012, doi:

10.1109/ITHET.2012.6246057.

- V. Moreno, F. Cavazotte, and I. Alves, "Explaining university students' effective use of e-learning platforms," *Br. J. Educ. Technol.*, vol. 48, no. 4, pp. 995–1009, 2017, doi: 10.1111/bjet.12469.
- A. Althunibat, "Determining the factors influencing students' intention to use m-learning in Jordan higher education," *Comput. Human Behav.*, vol. 52, no. March, pp. 65–71, 2015, doi: 10.1016/j.chb.2015.05.046.
- M. Williams and J. Williams, "Evaluating a model of business school students' acceptance of web-based course management systems," *Int. J. Manag. Educ.*, vol. 8, no. 3, pp. 59–70, 2010, doi: 10.3794/ijme.83.264.
- R. Hussein, U. Aditiawarman, and N. Mohamed, "E-Learning acceptance in a developing country: A case of the Indonesian Open University," 2007.
- K. A. Pituch and Y. kwei Lee, "The influence of system characteristics on e-learning use," *Comput. Educ.*, vol. 47, no. 2, pp. 222–244, 2006, doi: 10.1016/j.compedu.2004.10.007.
- G. Fauville, M. Luo, A. C. M. Queiroz, J. N. Bailenson, and J. Hancock, "Zoom Exhaustion & Fatigue Scale," *SSRN Electron. J.*, no. May, 2021, doi: 10.2139/ssrn.3786329.