The effect of external factors moderated by digital literacy on the actual use of e-learning during the Covid-19 pandemic in Islamic universities in Indonesia

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ARTICLE INFO	ABSTRACT
	The future of education is increasingly worrying due to the impact of the Covid-19 pandemic since the end of 2019. Restrictions on community activities and campus closures have forced university administrators to use e-learning. On the other hand, online learning has encountered many obstacles. Barriers to the use of e-learning are thought to stem from external problems (online facilities and infrastructure) or educators and students (internal factors), such as lack of literacy, low absorption, level of understanding, and other non-technical factors. This study aims to examine further the influence of external factors and digital literacy and the moderating effect of digital literacy with external factors (System Design, User Friendly, Devices, Internet, Electricity) on the actual use of campus e-learning at Islamic universities. This study found that: External factor variables have a significant positive effect on the actual use of e-learning. The digital literacy variable has a significant positive effect on the actual use of e-learning. The digital literacy variable weakens the influence of external factors on the actual use of e-learning at Islamic universities in Indonesia.

INTRODUCTION

Since the initial appearance of a new variant of the Coronavirus in Wuhan-China at the end of 2019, which was later named Sars-Cov 19, the pandemic has infected nearly 200 million people. Based on WHO data (03/08/2021), 223 countries have been affected by Covid-19, with 198.778.175 confirmed cases, 4.235.559 deaths, a total of 3.886.112.928 doses of vaccine have been given (UNESCO, n.d.).

The Covid-19 pandemic, both directly and indirectly, has had a wide impact on human life. In addition to causing health impacts, Covid-19 has also harmed almost all sectors. The significant impact felt by almost all countries confirmed by Covid-19 is the impact on the economic, social, political, and educational sectors.

In the economic sector, the distribution of goods and services can only be carried out with strict restrictions or health protocols, as well as culinary businesses and the Micro, Small and Medium Enterprises (MSME) sector, having to close their businesses because of the government's policy of restrictions to tackle the transmission of Covid-19, some are even forced to quit or go bankrupt because few customers come to make transactions, so they are unable to pay off

their investment loans. In the social sector, the hustle and bustle of night entertainment, social and religious associations, and communities were forced to stop carrying out activities to prevent the transmission of Covid-19.

In the political and government sectors, Covid-19 has forced governments in affected countries to make policies to prevent and control Covid-19. Even the government should cut and do refocusing the budget to provide social assistance, accelerate the absorption of vaccination, and breaking the chain of transmission of Covid-19.

The impact of the Covid-19 pandemic on the Education sector can be seen from the official report of the United Nations Educational, Scientific and Cultural Organization (UNESCO), it was reported that:

> *One year after the COVID-19 pandemic, almost half of the world's students are still affected by partial or complete school closures, and more than 100 million additional chil-dren will fall below the minimum reading proficiency level as a result of the health crisis. Priori-tizing the restoration of education is critical to avoiding a generational disaster as highlighted at the ministerial summit in March 2021.* (UNESCO, n.d.).

UNESCO supports countries in their efforts to reduce the impact of school closures, address learning loss and adapt education systems, especially for vulnerable and disadvantaged communities. To mobilize and support sustainable learning, UNESCO has formed the Global Education Coalition which currently has 160 members working on three main themes: Gender, connectivity, and teachers (UNESCO, n.d.).

The future of education is very worrying and is at stake due to the direct and indirect impacts of the current Covid-19 pandemic. Learning conducted through online media (e-learning or social media), has encountered many obstacles. Barriers to the use of e-learning can come from external problems (online facilities and infrastructure) as well as from factors originating from within the educators and students (internal factors) such as lack of literacy, low absorption, level of understanding, and other non-technical factors. Referring to the results of research by Putro et al. (2020), the five countries that are the subject of this study (Indonesia, the Philippines, Nigeria, Finland, and Germany), are divided into groups of poor, developing and developed countries.

Problems of online learning during the Covid-19 pandemic found in research Putro et al. (2020) can be classified into two groups, namely technical and non-technical problems. Technical problems include the issue of inadequate internet network availability, unsupported electricity network, limited availability of supporting equipment (facilities) both in terms of educators and students, and school access to software that supports online learning is not evenly distributed.

The non-technical factors include the problem of the level of understanding of the material taught online, the many and piling up of assignments submitted online, the lack of equitable mastery of information technology from educators and students, the uneven financial ability of students, the online learning system is easy to cause problems. boredom in students, disruption of household work (because learning must be from their respective homes), students' difficulties in adapting to online learning systems, online learning systems reduce verbal communication between educators and students, disruption of the academic calendar (due to policy changes), routine training and seminar activities are eliminated, there is a learning gap, education budget cuts, interference from family, friends and the environment (because learning is carried out from home), lack of response and good coordination in overcoming obstacles in online learning, I said. the lack of distance learning experiences, the high cost of the internet, the poor condition of education in the pre-pandemic period, the lack of parental support and understanding of online learning, rapid changes that result in insufficient time to make appropriate learning designs, the gap between students who have high ability and good mentality in learning with students with the opposite nature, online group assignments are less effective, fatigue, there is a view that technology in the world of education is not good for children.

The non-technical ability of educators and students in using online learning systems as described in a study by Putro et al. (2020) cannot be separated from the digital literacy of educators

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and students, this is following the results of the study Widana (2020, p. 8) who found that "…the digital literacy factor is one of the variables that significantly affect the ability of teachers to develop HOTS-based assessments…" Widana's research results are in line with a research by Noh (2017) who found that "…bit literacy most influences information usage behavior, followed by virtual community literacy and technical literacy… Bit literacy is related to the ability to use information including information retrieval, information acuity, information editing, information processing, and information utilization…"

A research presented by Jan (2017, p. 31) found that "… digital literacy (DL), tablet and smartphone use, previous training in computer use and frequency of computer use significantly influence students' attitudes toward ICT use". On the other hand, the results of Jang et al. (2020) found that digital literacy had no direct significant effect on the intention to use. On the other hand, the research conducted by Jang et al. (2020) found that "Digital Literacy did not have a direct significant effect on the intention to use learning technology in Finland…"

The researchers chose the state Islamic universities (*Perguruan Tinggi Keagamaan Islam Negeri* or PTKIN) as the research locus, considering that the majority of students and lecturers at PTKIN were graduates of traditional Islamic boarding schools, considering the results of a research by Azzahra and Amanta (2021) that most Islamic boarding schools in Indonesia use traditional learning systems so that it is difficult to obtain digital literacy and use digital technology. There is no complete information regarding how many Islamic boarding schools are equipped with facilities such as the internet and computers. Thus, based on the research gap and the results of previous studies, this paper aims to further examine the influence of external factors moderated by digital literacy skills on the use of e-learning at state Islamic universities in Indonesia.

External Factors

Given the breadth of the definition of external factors, the researchers narrowed the meaning of external factors only to the context or scope of learning information technology. Limiting the meaning of external factors is intended to facilitate the identification of variables and their indicators. The external factors referred to in this study are related to factors originating from outside the students themselves that can affect their ability to utilize information technology.

External variables can be defined as factors outside the users of information technology, such as; information system design, easy to understand or easy to learn, availability of supporting devices (Smartphone/Computer), adequate Internet network, adequate electricity network. According to Davis et al. (1989, p. 985), perceived usefulness can be influenced by several external factors, educational programs are designed to "capture" potential users to use information systems to increase user productivity. Still according to Davis et al. (1989, p. 985), learning based on the concept of feedback between educators and students is another type of external variable that can affect beliefs in the use of information technology.

Digital Literacy

According to Krumsvik (2008) in Liu et al. (2020), "Computer-based literacy, media literacy, digital literacy, and digital competence are concepts that focus on the need to use technology in the digital era". Meanwhile, according to Kaeophanuek et al., (2019) digital literacy is:

> …*a set of competencies possessed by an individual to apply digital tools well in the digital era, easily accessing, applying, evaluating, analyzing and synthesizing data, as well as creating new knowledge. With that, students will be able to communicate and present content through various digital technologies.*

A good level of digital literacy will make it easier for students to achieve their goals. If literacy is defined as a person's ability to read, interpret written sources of knowledge in a social group, then academic literacy is the ability to read, interpret and produce information in a digital format that is valued in academia (Kaeophanuek et al., 2019, p. 24).

According to Ferrari; Kaeophanuek, et al.; and Owen, et al. in Kaeophanuek et al. (2019, p. 24), the indicators that form digital literacy variables can be identified as follows. (a) Information skills: The basis for information management, techniques, and various strategies involving digital information management, which includes the process of identifying problems, determining the search topics, methods, and strategies for accessing, analyzing, synthesizing content, systematizing, evaluating, interpreting, and applying information used in doing or solving problems correctly. (b) Use of digital tools: Skills and competencies in learning how to use a wide variety of software and applied digital tools to successfully accommodate everyday life. It also relates to the ability to maintain, manage use and troubleshoot basic computers, as well as the ability to communicate, systematically manage either personal or network data, comply with ethical norms, and utilize technology for effective teamwork. (c) Digital transformation: Skills in consolidating information to create, improve, design, and producing content and products, and presenting information in the form of new information, creating new knowledge and new digital innovations under collaborative learning. Learners can reflect on their thoughts to improve their work and publish it following copyright laws.

Actual System Use

Actual use (actual system use) is a real condition of the application of information systems/information technology measured in units of time or frequency of technology use, users will feel satisfied while using information system services or information technology if they believe that the system has been used, can increase productivity work that is reflected in the real conditions of use (Davis et al., 1989, p. 987; Venkatesh & Davis, 2000, p. 204). Measurement of actual usage (actual system usage) can be evaluated in units of time, how often users use information technology service systems in terms of duration of usage time. Actual technology use is measured by the amount of accumulated time spent interacting with technology and the number of times using the technology (Davis et al., 1989, p. 987; Venkatesh & Davis, 2000, p. 204). According to Li and Lalani in Hermawan (2021), "E-learning can be found from a variety of existing learning media, ranging from language applications, video conferencing tools, virtual tutoring, online learning software, Moodle, and many more".

Based on the opinions of experts that have been put forward, an online learning system (e-learning) is a set of software designed as an online-based learning medium (using an internet network) that can be accessed via desktop computers and mobile devices (smartphones) containing learning plans, learning process, and learning evaluation. Learning plans can be designed and incorporated into e-learning based on the curriculum content that has been set in the learning curriculum document. The learning process through e-learning includes delivering material in various forms, such as textbooks, journals, presentation slides, audio videos, or learning website addresses, recording the attendance of teachers and students, and discussion rooms. E-learning applications at certain universities or schools have been designed following the requirements of the quality standards of education with special criteria and conditions, which are different from social media or e-learning based on content management systems offered by software development companies such as Google. classroom, moodle, and others.

According to Davis et al. (1989), External variables have no direct effect on attitudes and behavior in using technology, but the technology acceptance model proposed by Davis et al. (1989) found that there is a procedure that bridges between external variables and attitudes in using technology, it is triggered by individual differences related to one's personality and characteristics, which are related to one's self-confidence and belief.

A research by Jan (2017, p. 31) found that "… digital literacy (DL), tablet and smartphone use, previous training in computer use and frequency of computer use significantly influence students' attitudes toward ICT use". On the other hand, the results of Jang et al. (2020) found that digital literacy had no direct significant effect on the intention to use.

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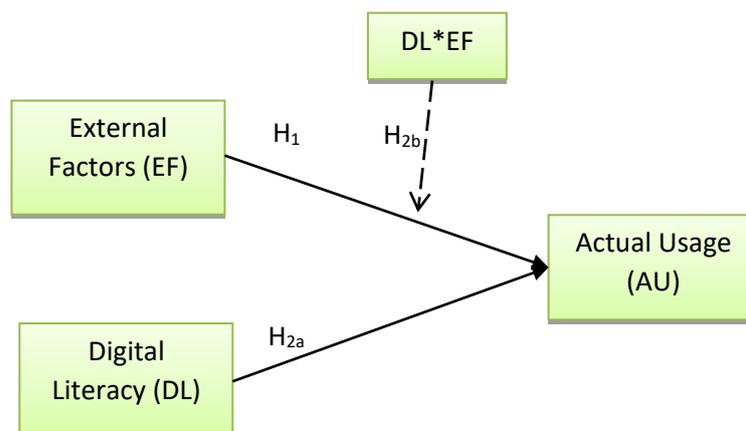
Figure 1. Thinking Framework

The researchers have not found any previous studies that place digital literacy as a moderating influence between external factors on the actual use of information and computer technology (ICT), therefore the researchers intend to develop a model that has been found previously by experts, by placing digital literacy as a moderating variable of the influence between external factors on the actual use of e-learning. Based on the theories and results of previous research, this research model can be described as in Figure 1.

METHOD

This study uses a correlational research design and a quantitative approach. The use of the correlational method is to determine the coefficient of the effect of the predictor variables on the response variable (Creswell, 2012, p. 45). The correlational research design is used to analyze the direct influence of external variables and digital literacy variables on the use of e-learning, as well as to measure the impact of digital literacy variables which are hypothesized to strengthen or weaken the influence of external variables on the use of e-learning.

Based on the theory that underlies the relationship between external factors and digital literacy on the use of learning information technology (e-learning), the researchers formulate the following hypothesis. H_1: There is a significant direct effect of external factors on the actual use of e-learning at Islamic universities in Indonesia; H_{2a}: There is a direct positive and significant influence of digital literacy on the actual use of e-learning at Islamic universities in Indonesia; H_{2b}: Digital literacy variables can strengthen the influence of external factors on the actual use of e-learning at Islamic universities in Indonesia.

To answer the research questions, the researchers used one of the units of multivariate statistical analysis, namely; structural equation modeling (SEM) with partial least squares (PLS) approach. Herman Word introduced SEM-PLS to model latent variables which he called "soft modeling". The term refers to the flexibility of using SEM-PLS which does not require many assumptions and does not have to be based on a strong theory. SEM-PLS can be used for theory confirmation but can also be used to develop models (Vinzi et al., 2010, p. 2). The analysis of Structural Equation Modeling with the Partial Least Square (PLS) approach consists of two stages: Evaluation of the measurement model in the SEM-PLS analysis is called the Outer Model, and the evaluation of the structural model, in terms of SEM-PLS, is called the Inner Model.

Model estimation in SEM-PLS is carried out in two stages, namely: first; conducting an assessment of the measurement model (outer model), second; conducting an assessment of the structural model (Inner model). The measurement model is defined through the equations in Formula (1) and Formula (2), in which λ = Factor load from indicator to latent variable, δ = Re-

sidual/error on the exogenous latent variable indicator, ε = Residual/error on the endogenous latent variable indicator, $x_i \dots x_k$ = Exogenous latent variable indicators, $y_i \dots y_k$ = Endogenous latent variable indicators.

$$x_{ij} = \lambda_{ij}\xi_i + \delta_j; j = 1, 2, 3 \dots. k \dots\dots\dots\dots\dots\dots\dots (1)$$
$$y_{ij} = \lambda_{ij}\eta_i + \varepsilon_j; j = 1, 2, 3 \dots k \dots\dots\dots\dots\dots\dots\dots (2)$$

The quality of the measurement model can be assessed from several measuring instruments related to the instrument items' validity and reliability (Garson, 2016; Hair et al., 2014; Lohmöller, 1989), that is: (1) Convergent Validity; an instrument item can be designated as a valid measurement if it has a loading factor value of ≥ 0.7, (2) Discriminant Validity; a variable measurement item can be designated as a good measurer, if it has the item only significant in measuring the latent construct/variable in its indicator block, and should not be significant in other latent variable indicator blocks, and (3) Composite Reliability and Internal Consistency; instrument items meet composite reliability if they have a composite reliability coefficient (CR) > 0.7, and are considered to have good/ideal internal consistency if they have Cronbach's Alpha coefficients > 0.7.

The structural model (inner model) can be defined through the following mathematical equations in Formula (3), where η = Endogenous latent variable, ξ = Exogenous latent variable, γ = Parameter coefficient (factor loading) of exogenous latent variable to endogenous latent variable, and ζ = Residual/error of inner model. The inner model can be assessed from several statistical measures as follows: (a) Model fit (fit index, coefficient of determination, and effect size), and (b) Hypothesis Testing (direct and indirect effect, total effect).

$$\eta_1 = \gamma_{11}\xi_1 + \zeta_1$$
$$\eta_2 = \gamma_{21}\xi_2 + \beta_1\eta_1 + \zeta_2$$
$$\vdots$$
$$\eta_i = \gamma_{21}\xi_i + \beta_1\eta_1 + \beta_2\eta_2 + \dots + \beta_k\eta_k\zeta_i \dots\dots\dots\dots (3)$$

The sampling technique used in this paper is Simple Random Sampling. Sample Size is calculated using the sample formula from Lemeshow et al. (1990), as shown in Formula (4), where Z = Standard normal table value (if the confidence level is 95%, then the Z value = 1.96), P = The estimated proportion of the attributes that are in it, is assumed to be 0.5, and e = The absolute precision required.

$$n = \frac{z^2_{1-\frac{\alpha}{2}}P(1-P)N}{d^2(N-1)+z^2_{1-\frac{\alpha}{2}}P(1-P)N} \qquad \dots\dots\dots\dots\dots (4)$$

If set value; confidence interval (1-α) = 95% (α=5%), the standard normal distribution table value is 1.96. Anticipated population proportion = 0.80 assuming the proportion of students using e-learning at PTKIN is 80%. The expected absolute precision was set at =0.03999 (close to the 5% significance level). Relative precision (ε), equal to = 0.0499875 (close to 5% significance level). The population size is 760.619. Then, the sample size can be calculated based on Formula (4), as follows.

$$n = \frac{1,96^2 0,8(1-0,8)760.619}{0,03999(760.619-1) + 1,96^2 0,8(1-0,8)760.619}$$
$$= 385$$

The ideal number of samples in this study were 385 respondents, taken randomly from a student population of 760.619 from 59 state Islamic universities in Indonesia. Primary data in this

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study were obtained through a questionnaire. Questionnaires were distributed randomly to the respondents who were the target sample (students at state Islamic universities in Indonesia). The data collection instrument used was a questionnaire. This questionnaire was designed using the Symantec Differential Scaling scale. Symantec Differential Scaling is an attitude scale arranged in a continuum line, with very positive answers on the right and very negative answers on the left. The Symantec differential uses seven response options for the statement of each instrument item, with categories for positive questions graded from "Strongly Disagree" with an item score = 1 to "Strongly Agree" with score of = 7, on the contrary for negative questions graded from "Strongly Agree" with item score = 1 to "Strongly Disagree" with score = 7 (Rosenberg & Navarro, 2018).

Convergent validity checking on the reflective measurement model can be seen from the standardized loadings factor value which shows the correlation between indicator scores and latent variables, as in Table 1. Calculations using WarpPLS 7.0 software on 14 items of external factor variable indicator items and 23 digital literacy variable indicator items and seven item indicator variables for the actual use of e-learning, obtained the following results; items from the latent variables of external factors $x_{1.7}$, $x_{1.8}$, $x_{1.9}$, $x_{1.10}$, $x_{1.11}$, $x_{1.12}$, and $x_{1.13}$ have standardized loadings factor values < 0.7 so that seven items must be discarded because it is not valid in measuring the latent variable of external factors.

Table 1. Variables and Indicators of Measurement of Research Variables

No.	Variable	Indicators	Measuring Scale
1.	External Factors (Davis et al., 1989)	• E-learning design • Easy to Understand (user-friendly) • Online Device Availability (Smartphone/ Computer) • Adequate Internet Network Availability • Availability of adequate electricity grid	Ordinal
2.	Digital Literacy (Kaeophanuek et al., 2019)	• Skills in managing information • Skills in using digital equipment • Digital transformation	Ordinal
3.	Actual Usage of e-learning (Davis et al., 1989; Venkatesh & Davis, 2000)	• Usage time duration • Frequency of use	Ordinal

Table 2. Convergent Validity Checking

Item	EF	DL	AU	Indicator Type	Annotation
x1.1	0.777	0.192	0.052	Reflective	Valid
x1.2	0.771	-0.03	0.065	Reflective	Valid
x1.3	0.762	-0.06	0.122	Reflective	Valid
x1.4	0.798	-0.04	-0.116	Reflective	Valid
x1.5	0.739	-0.04	-0.176	Reflective	Valid
x1.6	0.751	-0.02	0.052	Reflective	Valid
x2.3		0.705	-0.009	Reflective	Valid
x2.8		0.781	-0.002	Reflective	Valid
x2.11		0.781	0.013	Reflective	Valid
x2.12		0.804	-0.002	Reflective	Valid
x2.14		0.735	-0.113	Reflective	Valid
x2.17		0.83	0.038	Reflective	Valid
x2.19		0.719	-0.041	Reflective	Valid
x2.20		0.766	0.039	Reflective	Valid
x2.21		0.754	0.068	Reflective	Valid
y1.1			0.847	Reflective	Valid
y1.2			0.859	Reflective	Valid
y1.3			0.743	Reflective	Valid
y1.4			0.853	Reflective	Valid
y1.5			0.805	Reflective	Valid

Furthermore, of the 23 items measuring the digital literacy latent variable indicator, 13 items have a standardized loading factor value of < 0.7, namely; items $x_{2.1}$, $x_{2.2}$, $x_{2.4}$, $x_{2.5}$, $x_{2.6}$, $x_{2.7}$, $x_{2.9}$, $x_{2.10}$, $x_{2.13}$, $x_{2.15}$, $x_{2.15}$, $x_{2.16}$, $x_{2.18}$, $x_{2.22}$ and $x_{2.23}$, these items are not valid in measuring digital literacy latent variables and must be excluded, because they are not valid in measuring digital literacy variables. In the variable of actual use of e-learning, there are two items of the questionnaire that have a standardized loading factor value of < 0.7 out of seven of the questionnaire items used to measure the actual use of e-learning, namely; $y_{1.6}$ and $y_{1.7}$, the items must also be excluded from the measurement, because it is not valid in measuring the actual use of e-learning variables. The results of measuring variables after removing instruments that do not meet the criteria for convergent validity in this study are presented in Table 2.

A measuring instrument is said to have good validity, not only judged by its ability to measure the variables in the contract to be measured but also to be significantly different from measurements in other construct indicator blocks. To find out how far the instrument items differ from one indicator block to another, it can be seen from the results of discriminant validity testing. The results of the discriminant validity test in SEM-PLS using WarpPLS software in this paper are presented in Table 3.

The results of the discriminant validity test in Table 3 show the average value of the variant extract (AVE) is below the root value of the average variant extract, so it can be concluded that the measurement item on the external factor latent variable is only valid for measuring external factor variables, thus also the items used in the digital literacy variable and the actual use of e-learning. The results of instrument reliability testing using composites and internal consistency (Alpha Cronbach) in this paper are presented in Table 4.

Table 3. Discriminant Validity Checking

Variable	AVE	Square of AVE	Annotation
EF	0.588	0.766812	Valid
DL	0.585	0.764853	Valid
AU	0.677	0.8228	Valid

Source: Primary Data, processed with SEM-PLS (WarpPLS 7.0), 2021.

Table 4. Composite Reliability Checking

Variable	Composite Reliability Coefficients	Internal Consistency (Cronbach's Alpha Coefficients)	Annotation
EF	0.895	0.859	Reliable
DL	0.927	0.911	Reliable
AU	0.913	0.88	Reliable

Table 5. Model Accuracy Criteria

No.	Model fit and quality indices	Statistics	Criteria (Kock, 2019)	Annotation
1.	Average path coefficient (APC)	0.296	$P<0.05$	Accepted
2.	Average R-squared (ARS)	0.52	$P<0.05$	Accepted
3.	Average adjusted R-squared (AARS)	0.517	$P<0.05$	Accepted
4.	Average block VIF (AVIF)	1.2	Accepted ≤ 5, Ideal ≤ 3.3	Ideal
5.	Average full collinearity VIF (AFVIF)	1.621	Accepted ≤ 5, Ideal ≤ 3.3	Ideal
6.	Tenenhaus GoF (GoF)	0.609	Small ≥ 0.1, Medium ≥ 0.25, Large ≥ 0.36	Large
7.	Sympson's paradox ratio (SPR)	1	Accepted ≥ 0.7, Ideal $= 1$	Ideal
8.	R-squared contribution ratio (RSCR)	1	Accepted ≥ 0.9, Ideal $= 1$	Ideal
9.	Statistical suppression ratio (SSR)	1	Accepted ≥ 0.7	Ideal
10	Nonlinear bivariate causality direction ratio (NLBCDR)	1	Accepted ≥ 0.7	Ideal

The results of composite reliability test and Cronbach's Alpha internal consistency show that all variables have a measurement coefficient value > 0.7. It indicates that all measurement items of external factor variables, digital literacy, and actual use of e-learning are reliable and consistent in measuring their respective latent variables. The suitability of the model with the theory that underlies the relationship between variables can be seen from the model's accuracy index. It can be interpreted by how accurately the research model confirms the results of previous studies. If the model accuracy index is met (ideal and significant), it means; The model developed is stated to be appropriate and has succeeded in confirming the results of previous studies. The SEM-PLS using WarpPLS 7.0 application, presents ten types of model accuracy indexes as seen in Table 5.

Based on the ideal criteria and the accuracy index value of the model obtained, it can be concluded that the model developed in this study is appropriate or does not violate the results of previous studies. SEM-PLS in principle is a development of regression analysis, for that, it is required that the indicator block must be free of multicollinearity which is marked by the value of Variance Inflation Factors (VIF)<3 The value of variance in this paper can be seen in Table 6.

Taking into account the value of the latent variable indicator block VIF in Table 6, it can be seen that all latent variables, including the moderating variable between digital literacy and external factors, have a VIF value <3.3, which can be interpreted that all indicators are multicollinearity free. The size of the effect (effect size) is a measure of the meaning of the results of research at a practical level. The effect size criteria are; if the value of effect size (f) = 0.1 means it has a small effect size, f = 0.25 has a medium effect size, and f = 0.4 has a large effect size (Kock, 2019). The effect size value of this paper can be seen in Table 7.

The effect size value in Table 7 can be interpreted that, the size of the influence of external factor variables on the actual use of e-learning is moderate, the influence of digital literacy on the actual use of e-learning is moderate and the interaction of digital literacy with external factor variables on the actual use of e-learning relatively small. The coefficient of determination shows the magnitude of the contribution of the exogenous latent variable to the endogenous latent variable. The results of the analysis show that the R-Square value of 0.52, it can be interpreted that the variation of the actual use of e-learning variables can be explained by external factors, digital literacy and moderation between digital literacy and external factors is 52.00% while the remaining 48.00% is explained by other variables not included in this study.

Hypothesis testing using SEM-PLS can be assessed from the path coefficient. This measurement is obtained through the estimation of the parameters of the research model. The results of the SEM-PLS parameter testing using the WarpPLS 7.0 software are presented in Table 8.

Table 6. Multicollinearity Assumption Checking

Variable	VIF
EF	1.757
DL	1.538
AU	2.059
DL*EF	1.131

Table 7. Effect Size

Variable	f	Annotation
EF	0.317	Medium
DL	0.171	Medium
DL*EF	0.032	Small

Table 8. Path Parameter Coefficient

Relationship Between Latent Variables	Path Coefficients	P-Value	Annotation
EF --> AU	0.488	<0.001	Accepted
DL --> AU	0.308	<0.001	Accepted
DL*EF -->AU	-0.092	0.034	Accepted

The parameter coefficients of the SEM-PLS path in Table 8 can be explained as follows. The path parameter coefficient that marks the relationship between external factors and the actual use of e-learning is 0.488 with a P-Value <0.05 (significant at the 5% level), H01 is rejected. It indicates that the external factor variable has a significant positive effect on the actual use of e-learning. learning at state Islamic universities in Indonesia during the Covid-19 pandemic.

The path parameter coefficient that marks the relationship between digital literacy and the actual use of e-learning is 0.488 with a P-Value <0.05 (significant at the 5% level), H02a is rejected, it can be interpreted that the digital literacy variable has a significant positive effect on the actual use of e-learning. learning at state Islamic universities in Indonesia during the Covid-19 pandemic. The path parameter coefficient that marks the moderation between external factors and digital literacy on the actual use of e-learning is -0.092 with a P-Value of 0.05 (significant at the 5% level), H_{02b} is rejected, it can be interpreted that the digital literacy variable weakens the influence of external factors on the actual use of e-learning at state Islamic universities in Indonesia during the Covid-19 pandemic. The final model of this research can be seen from the path diagram of the SEM-PLS analysis output as presented in Figure 2.
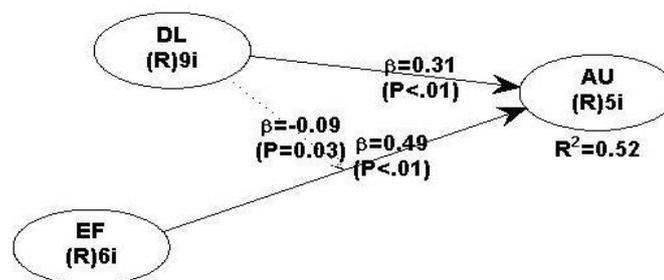
Figure 2. PLS-SEM Path Diagram (Final Research Model)

The path diagram in Figure 2 shows the parameter coefficient (β) and P-Value (probability value) between the exogenous latent variable and the endogenous latent variable. The path parameter coefficients can be entered in the mathematical model according to the structural model equation in Formula (3) as follows.

$$\widehat{AU} = 0{,}49EF + 0{,}031DL - 0{,}09DL * EF$$

The mathematical equation for the AU estimation model above can be explained as follows. Parameter coefficient (β_1) is 0.49, meaning; every increase in external factors by 1 point, will have a significant impact on increasing the actual use of campus e-learning by 0.49 points, assuming other variables that influence it to remain. The parameter coefficient (β_2) is 0.31, meaning; every 1 point increase in digital literacy will have a significant impact on an increase in the actual use of learning by 0.31 points, assuming other variables that influence it to remain the same. The parameter coefficient (β_3) is -0.09, meaning; every interaction between external factors and digital literacy will have a significant impact in reducing the influence of external factors on the actual use of e-learning by 0.09 points.

FINDINGS AND DISCUSSION

The influence of external factors on actual use is indicated by the positive and significant coefficient of the SEM-PLS structural model parameter at the 5% level which means that external factors have a significant positive effect on the actual use of e-learning at state Islamic universities in Indonesia during the Covid-19 pandemic. This finding verifies the research findings of Noh (2017) and Widana (2020) but is not in line with Davis et al. (1989) who state that external variables do not directly affect attitudes and behavior in the use of technology.

The effect of digital literacy on actual use is indicated by the parameter coefficients on the structural model which are positive and significant at the 5% level, meaning that; Digital literacy has a significant positive effect on the actual use of e-learning at state Islamic universities in Indonesia during the Covid-19 pandemic. The findings of this study are in line with the results of Jan (2017) who stated that "… digital literacy (DL), tablet and smartphone use, training, previous use of computers and frequency of computer use significantly influence students' attitudes towards ICT use". The results of this study are not in line with the results of the research of Jang et al., (2020, p. 1) who found that "Digital literacy did not have a direct significant effect on the intention to use learning technology in Finland...".

The Moderating effect between digital literacy and external factors is indicated by the negative and significant SEM-PLS structural path parameter coefficient at the 5% level, meaning that the digital literacy variable weakens the influence of external factors on the actual use of e-learning at state Islamic universities in Indonesia during the Covid-19 pandemic. Findings related to the moderating relationship of external factors with digital literacy show a unique phenomenon, if students are more skilled in managing information, using digital equipment, and being able to transform digital data and information, combined with the availability of adequate facilities and infrastructure, it will weaken the frequency and duration of their time in using digital literacy e-learning.

This finding is interesting to observe because it contradicts the general assumption that better understanding and literacy supported by adequate facilities and infrastructure will have a positive impact on the frequency and duration of ICT use. In fact, from the results of direct observations of researchers while teaching at the state Islamic universities (as participant-observers), and preliminary research interviews with PTKIN students and lecturers, that students who have more skills in the field of ICT, and adequate supporting facilities do not feel at home for a long time in using e-learning, because they can still follow the learning process through recordings of material that have been uploaded in e-learning, so most of them only record attendance online, download material to be repeated on a computer or smartphone device offline, with more time and cost-efficient reasons.

The findings of this study, are supported by the results of Ferri et al. (2020) revealing that there are several challenges in using online learning media during an emergency (Covid-19 pandemic), including technological challenges, pedagogics, and social challenges. Technological challenges related to an inadequate internet connection, and lack of necessary electronic devices. Pedagogic challenges, related to the lack of digital skills of teachers and students, the lack of structured content when compared to the number of online resources, the lack of interaction between students and teachers, and the lack of social presence and teacher cognition. Social challenges are related to the lack of interaction between teachers and students.

CONCLUSION

The results of this study can be concluded that; External factor variables have a significant positive effect on the actual use of e-learning. The digital literacy variable has a significant positive effect on the actual use of e-learning. The digital literacy variable weakens the influence of external factors on the actual use of e-learning on Islamic college campuses in Indonesia.

The researchers realize that there are several limitations in this paper, first; there is no previous research that places digital literacy as a moderating variable of external factors on the actual use of e-learning. Second; The researchers only adopted and adapted the actual use variable in the Technology Acceptance Model theory developed by Davies, and added the role of digital literacy as a moderating variable from the influence of external factors on the actual use of e-learning. Third; this research was conducted in a short time, there was no instrument trial, so from the results of field testing many research instrument items had to be issued. Fourth; The population limit is unknown, so the proportion of samples taken is not evenly distributed across all state Islamic universities.

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