

# Online Learning

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# Measure The Significant of Learning Value and Trust Factors for Online Learning Technology Acceptance in Indonesia

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**Abstract**—One of the main stages to achieve the success of online learning technology is the acceptance of the technology by its users. Therefore, identifying how significant the influence of a factor in the success of technology acceptance is very important. This study aims to learn the impact of learning value and trust factors on the acceptance of online learning technology. To test the research hypothesis used the Partial Least Square Structural Equation Modeling (PLS-SEM) method. This research is a quantitative study with a survey approach to respondents, where respondents must have used online learning technology. The results of the study show that the influence of learning value and trust factors on the adoption of online learning technology is significant. The results of the testing of these two factors can be taken into consideration for providers of online learning technology in Indonesia as a reference in making strategic decisions for further development.

**Keywords**—Online Learning, Partial Least Square, Structural Equation Modeling, Technology Adoption, Technology Acceptance

## 21 INTRODUCTION

The advancement of information technology has significant impacts on many aspects of human being, including education. The most typical usage of information technology for education is online learning. Online learning is one of the best developments that occur in this period. To learn no longer have to be in the same place as the teacher. Time problems can be flexible, not bound to be at the same time. Changes in times that are very fast making a gap in technology. It is one of the problems of how technology can be accepted by society at large. This trend brings a fundamental paradigm shift in education [1].

There are numerous types of online learning which need to be commensurate with the required kind of education; whether it is for people, schools, universities, or organizations in general. With the goal of training or education, online learning can be used to accomplish the objectives of standard education with less effort, cost, and time [2]. Online learning was consisted of as one of the learning styles, together with remote learning, computer-aided learning, and online learning [10].

The useful application of online learning tools depends upon the perception of the users and likewise, their knowledge and abilities in using computer systems. Such significant factors have been shown to impact users' initial approval of computer technology and their future behavior regarding the usage of web-based learning systems [4] [5].

This study seeks to measure how significant learning value and trust factors are towards the acceptance of online learning technology in Indonesia. The existence of online learning technology in the world has brought significant changes, especially regarding the dissemination of educational content. The condition of the

supporting infrastructure for the implementation of online learning is still not fully distributed in all regions in Indonesia. The existence of the internet, which is the main requirement for the continuity of online learning, has become an obstacle for some people in Indonesia.

## II. LITERATURE REVIEW

### A. Previous Research

In his research on online learning [3] in 2018, Panigrahi et al. state that understanding e-learning adoption, continuation, and learning outcomes in online platforms is very important in ensuring the successful implementation of technology in learning and achieving maximum benefits [6]. Bates in 1997 suggested that information technology played a central role in teaching at universities. A broad introduction to technology-based teaching will require fundamental changes to institutions to meet the needs of 21st-century students and society [7].

The results of other studies on online learning conducted by NoorUl Ain et al. in 2015 showed that learning value affected students' intentions to use Learning Management System [8]. In addition, from research from Mazen El-Masri and Ali Tarhini in 2017 confirm that trust is an important consideration in e-learning [22] option studies, so it is hoped that trust will influence students' behavioral intentions to use e-learning systems [9].

In 2015, Engle, Mankoff, and Carbrej conducted research on student demographics from an MOOC, Coursera. They found that 29.5% of students aged 18-25 years and about 30.3% were aged 26-34 years [10].

One of the online learning technology providers in Indonesia, "RuangGuru" has more than 6 million users. Based on this reference, we conclude that Indonesia already has quite a number of users of the online learning Platform.

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### B. Online Learning

At present, the learning process is an essential factor in business and socio-economic growth, where the role of information and communication technology grows and has an innovative impact. Learning, education and training using traditional classroom methods and emerging online techniques all lead to increasing ways to invest in people, increase their capacity and reach out to the masses while reducing costs, time and effort [11].

Electronic learning is one of the most well-known technologies found to make the process of traditional education more accessible with the help of software applications and virtual learning environments [12].

Online learning and training are gaining popularity throughout the world, reducing the temporal and spatial problems associated with traditional forms of education [6]. The main factors behind the use of online learning are not only to improve access to education and training, and the quality of learning, but also to reduce costs and increase the effectiveness of education costs [7].

At this time, online learning was ubiquitous using the internet as a platform. Online Learning Platform (OLP) not only provides courses/lectures, but also serves certification and granting academic degrees online.

### C. PLS-SEM

Structural Equation Modeling (SEM) is a statistical technique that can analyze the pattern of relationships between latent constructs and indicators, latent constructs with each other, and measurement errors directly. SEM allows direct analysis between several dependent and independent variables [13].

There are two approaches in Structural Equation Modeling (SEM), namely: SEM-based covariance or also called Covariance Based-SEM (CB-SEM) and SEM with variance approach (VB-SEM) with Partial Least Squares-SEM (PLS-SEM) technique. CB-SEM focuses more on building a model that is intended to explain covariances of all construct indicators, while the purpose of PLS is a prediction. The PLS approach is more suitable because this approach assumes that all measures of variance are useful variances to explain.

PLS is said to be a powerful analytical method because it can be used on any type of data scale (nominal, ordinal, interval, and ratio) without using many conditions for assumptions that must be fulfilled [14].

### E. Learning Value

Based on the definition of price value proposed by Venkatesh, the Learning Value can be defined as a cognitive exchange between the value of perceived benefits compared to the time and effort needed to use it [8]. From a consumer perspective, a product or service holds value if it provides benefits. In other words, learning value is positive when the benefits of adopting technology are considered to be higher than the time and effort needed.

### F. Trust

Trust (trust) is defined as the willingness of individuals to accept vulnerabilities because of positive expectations about the intentions or behavior of others in situations characterized by interdependence and risk [15].

Reviewing the literature related to technology adoption, trusts are found to be the main predictors of behavioral intention [16] [17] [18] [19] and in e-learning [20] [21] [22] [23].

It is because the user's decision will be dominated by security issues and trust when using a system/technology.

Personal interest in using Online Learning Platform technology ultimately depends on the level of trust in the system, so if the level of trust is sufficient, individuals are more likely to adopt it.

## III. METHODOLOGY

### A. Proposed Method

The research method is a step and procedure that is carried out to achieve goals and obtain answers to research problems. These steps and procedures are an embodiment of the framework of the research methodology. The steps and procedures carried out in this study are presented in Figure 1.

**Formulation of Research Problems and Objectives.** At this stage, the researcher looks for and learns about the problems that will be carried out in the study. Then proceed with determining the purpose of the study, which is to find out how significant learning value and trust technology acceptance in online technology in Indonesia. Then analyze these factors with the PLS-SEM method.

**Study of literature.** After formulating the problem and research objectives, the researcher then conducts a study related to the topic of research. At this stage, the researcher conducts a literature study process regarding the literature related to research to find out and understand the scope of the research to be conducted. Literature studies are sourced from international journals, books, and previous research related to the research that will be conducted.

**Making Research Design.** To determine how significant learning value and trust technology acceptance in online technology, this study uses a conceptual model based on previous studies and new findings that have been empirically tested. This research is a quantitative study with a survey approach. Quantitative method is a scientific approach that sees a reality can be classified, concrete, observable, and measurable, the variable relationship is causal where the research data is in the form of numbers, and the analysis uses statistical methods [24]. The choice of trust construct variables is based on research conducted by Mazen El-Masri and Ali Tarhini in 2017, where they include trust in their models because the results of their research show that trust is an influential factor that can influence technology adoption. The intention of students to use the e-learning system ultimately depends on the level of trust in the system, so if the level of trust is sufficient, students are more likely to adopt it [9]. While the choice of learning value construct variables is based on research conducted by Noor Ain, Kiran Kaur, and Mehwish Waheed in 2015, where they researched learning value in the Learning Management System. Their study extends the UTAUT2 framework by integrating the learning value construct about predictors of student intention towards LMS and its use. The results of their research indicate that learning value has a significant effect on student interest in LMS [8].



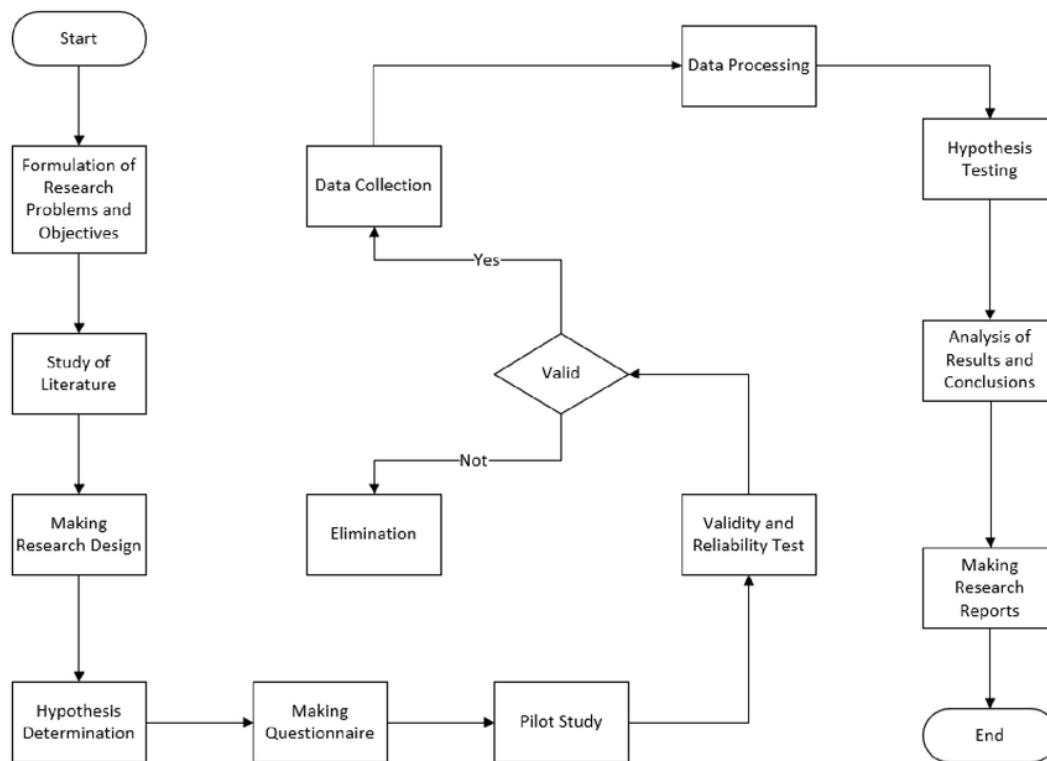


Figure 1. Framework for Research Methodology

**Hypothesis Determination.** This study examines three hypotheses, namely: 6

- H1: Learning Value has a significant effect on Behavioral Intention.
- H2: Trust has a significant effect on Behavioral Intention
- H3: Behavioral Intention has a significant effect on Use Behavior

**Making Questionnaire.** This study use a media questionnaire to collect data. The questions on the questionnaire form are in the form of structured questions whose alternative answers have been provided. The types of structure of questions used include:

- 1) Multiple-choice questions. In this question, the researcher gives a choice of answers, and the respondent is asked to choose one or more answers that have been provided. This type of question is used to find out the profile of the respondent.
- 2) Scale. Questions using a scale are used to measure and find out the respondent's responses regarding the questions contained in the questionnaire. The research questionnaire used the Likert scale method with 5 points.

**Pilot Study.** Before conducting primary data collection by distributing questionnaires, researchers conducted a pilot study first. At this stage, the research instrument was tested, namely the questionnaire. The purpose of this test is to test whether the questionnaire used has fulfilled the requirements as a measuring instrument that is good and following the standards of the research method. The

testing is done by testing the validity and reliability test. In testing the validity and reliability, researchers used 30 respondents who were similar to respondents in the actual data collection. Also, this stage aims to find out whether the questions in the questionnaire can be understood by the respondents so that they can provide appropriate answers. If there is a deficiency in the questionnaire that has been made, the questionnaire will be improved. The results of this improvement will be re-tested until a questionnaire is formed which questions can be understood and do not cause ambiguity for the respondents. The questionnaire from the last improvement will be distributed to all samples to get the data that will be used in this study.

**Validity and Reliability Test.** Validity is closely related to the accuracy of an indicator in measuring something that should be measured. The scale accuracy of the measurement instrument used will guarantee that the measuring instrument used (statement on the questionnaire) is following the object to be measured. Reliability is related to the extent to which a measurement result produces relatively 14sistent results if an instrument is used repeatedly. Errors in measurement will result in different results in measuring something in common. Reliability is determined by repeatedly measuring the construct or variable attraction. The higher the level of relationship between scores obtained through 16ted measurements, the more reliable it will be.

**Data Collection.** The data sources used in this study are primary data. Primary data is obtained through an

ment in the form of a questionnaire to obtain data on the factors that influence the intention to use online learning technology.

**Data Processing.** In the process of data processing, analysis and assessment will be carried out using SEM. Following are the steps that will be carried out:

- 1) Preliminary Analysis. At this stage, the researcher will examine the questionnaire filled in by the respondent. This check is done to determine whether or not a questionnaire is appropriate for further use.
- 2) Frequency Distribution. Data that has been obtained from a questionnaire that is still in the form of random data can be made into grouped data, namely data that has been compiled into certain classes.
- 3) PLS-SEM Analysis. The completed questionnaire will then be processed using PLS-SEM (Partial Least Square Structural Equation Modeling). At this stage, the outer model and inner model will be tested. The outer model test is used to test the validity of the variables in the model and reliability test to find out whether the construct has good reliability to be tested further. While the inner model test or structural test is conducted to find out how much influence behavioral intention and use behavior in the acceptance of online learning technology using the calculation of R<sup>2</sup>. After that, a variable analysis will be carried out which influences the acceptance of online learning technology with t-value analysis using bootstrapping on PLS-SEM.

**Hypothesis testing.** Hypothesis testing is based on this research model and its hypotheses. After the data is processed with PLS, it will produce a P value (P-value). This P value will be used to decide whether the hypothesis is accepted or not by comparing it with alpha ( $\alpha$ ) = 5% with the following conditions:

- 1) P-value  $\leq$  value  $\alpha$ , then the decision is the hypothesis accepted. Accepted hypothesis means that there is a significant effect of the independent variable on the dependent variable.
- 2) P-value  $>$   $\alpha$  value, then the decision is the hypothesis is rejected. Rejected hypothesis means that there is no effect of independent variables on the dependent variable.

**Analysis of Results and Conclusions.** At this stage an analysis of the results of the hypothesis test will be carried out. The results of the analysis will show the relationship between variables that affect the acceptance of online learning technology. The results of this analysis will later become the basis for making conclusions from the research conducted

**Making Research Reports.** Making reports is done by making a summary and conclusions from the results of the research that has been done. This conclusion will answer the formulated problem formulas at the beginning of the study. From the results of these conclusions, it can be used as a reference for online learning technology service providers and recommendations for further development.

## Questionnaire

In this study, data collected in the form of primary data. Primary data is obtained by distributing survey forms,

namely structured data collection in the form of a questionnaire. This questionnaire will be distributed online to various social media using the digital questionnaire form facility, Google Forms. Questionnaires will also be distributed offline to respondents using questionnaire paper. The method used in filling out the questionnaire was a self-administered survey, where the questionnaire was filled in by the respondent himself.

The questions in the questionnaire about online learning technology are formed from information on the variables to be studied. In this study using four variables consisting of:

- 1) Two independent variables: learning value and trust.
- 2) Two dependent variables: behavioral intention and use behavior.

Learning value, trust, and behavioral intention variables are measured using the Likert scale (points 1-5) with the following details:

- Strongly Disagree is given a score of 1
- Disagree given a score of 2
- Neutral is given a score of 3
- Agree given a score of 4
- Strongly Agree given a score of 5

While for the use behavior variable is measured by two statements, namely: how long has it been using the online learning technology and how often to use the online learning technology.:

- Score 1: less than one month, 1-3 times per year.
- Score 2: between 1-3 months, 4-6 times per year.
- Score 3: between 4-6 months, 7-9 times per year
- Score 4: between 7-12 months, 10-12 times per year
- Score 5: more than 12 months, more than 12 times per year.

The questions in the questionnaire cover various things as listed in Table 1.

Table 1.  
Main Questionnaire

Variable	Item	Item Description
Learning Value (LV)	LV1	Online learning technology is worth more than my efforts (good value for the effort).
	LV2	In a shorter period, online learning technology enables me to share knowledge with others easily (for example: chat sessions, forums).
	LV3	Online learning technology allows me to decide on my learning speed.
	LV4	Online learning technology allows me to increase my knowledge (e.g. through quizzes, assignments/assessments).
Trust (TR)	TR1	I believe online learning technology service providers prioritize user interests.
	TR2	I believe online learning technology service providers can be trusted.
	TR3	I believe the system in online learning technology has a good performance.
	TR4	I believe the system in online learning technology is safe.
Behavioral Intention (BI)	BI1	I intend to continue using online learning technology in the future.
	BI2	I will always try to use online learning technology in my daily life.

	BI3	I plan to continue using online learning technology as often as possible.
Use Behavior (USE)	HM1	How long have you been using online learning technology?
	HM2	How often do you use online learning technology?

#### IV. RESULT AND DISCUSSION

##### A. Preliminary Analysis

The number of respondents to the questionnaire obtained in this study were 254 respondents. The questionnaire was collected for approximately six weeks through online and offline deployment, where 103 respondents who filled out the questionnaire online and 151 respondents who filled out questionnaires offline obtained.

Of the 254 respondents' data, it was filtered, namely only those who had used OLP technology so that only 227 respondents had data. As mentioned in chapter 3, an examination of the questionnaire needs to be done to determine whether or not a questionnaire is appropriate for use in the subsequent analysis. After the inspection process was carried out, out of 227 questionnaires, there were two questionnaires that were not feasible due to the tendency to fill all neutral or strongly agree to all the questions given so that the questionnaire data that can be processed for this study amounts to 225 questionnaires.

##### B. Respondent Demographic

Based on 225 respondents who participated in this study, a summary of the demographic data of respondents can be seen in Table 2.

Table 2.  
Demographic Summaries

Category	Classification	Total	Percentage
Gender	Male	71	32%
	Female	154	68%
Marital Status	Single	171	76%
	Married	54	24%
Age	<= 20 year	100	45%
	21-25 year	45	20%
	26-30 year	34	15%
	31-35 year	32	14%
	>35 year	14	6%
Education	SMA	114	51%
	D1/D2/D3	19	8%
	S1/D4	56	25%
	S2/S3	36	16%
Location	Jakarta	12	5%
	Jawa Barat	5	2%
	Jawa Tengah	8	3%
	Yogyakarta	4	2%
	Jawa Timur	188	84%
	Lainnya	8	4%

Job	Jobless	2	0.9%
	Student	110	48.9%
	Entrepreneur	11	4.9%
	Health workers	31	13.8%
	Lecturer	25	11.1%
	Government employees	11	4.9%
	Private employees	27	12%
	Others	8	3.6%
Revenue	< Rp 2.500.000	125	56%
	Rp. 2.500.000-Rp. 5.000.000	34	15%
	Rp. 5.000.001-Rp. 7.500.000	34	15%
	Rp. 7.500.001-Rp. 10.000.000	13	6%
	> Rp. 10.000.000	19	8%

##### C. PLS-SEM Analysis

In this study, the researcher analyzed data using the Partial Least Square (PLS) approach. There are two stages of evaluation in the PLS, namely, evaluation of the structural model (inner model) and evaluation of the measurement model (outer model). The researcher used SmartPLS 3.2.8 software to process research data.

##### Creating a Structural Model (Inner Model).

The structural model in this study is made by combining latent variables based on substance theory. The latent variable itself is divided into two types, namely exogenous variables and endogenous variables. In this study, the endogenous variables are Behavioral Intention and Use Behavior. Besides these two variables are exogenous variables. The structural model of the research conducted by the researcher is shown as in Figure 2.

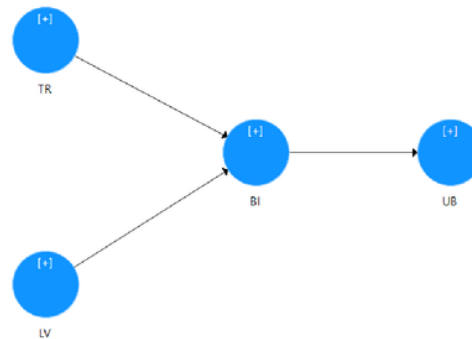


Figure 2. Structural Model

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##### Creating a Measurement Model (Outer Model).

The measurement model in this study is done by connecting all manifest variables (indicators) with latent variables, where each latent variable must have at least one manifest variable. In PLS-SEM, a manifest variable (indicator) can only be connected to one latent variable.

The measurement model of research conducted by researchers is shown in Figure 3. In the picture, it can be seen that the latent construct in this study is a latent reflective construct.



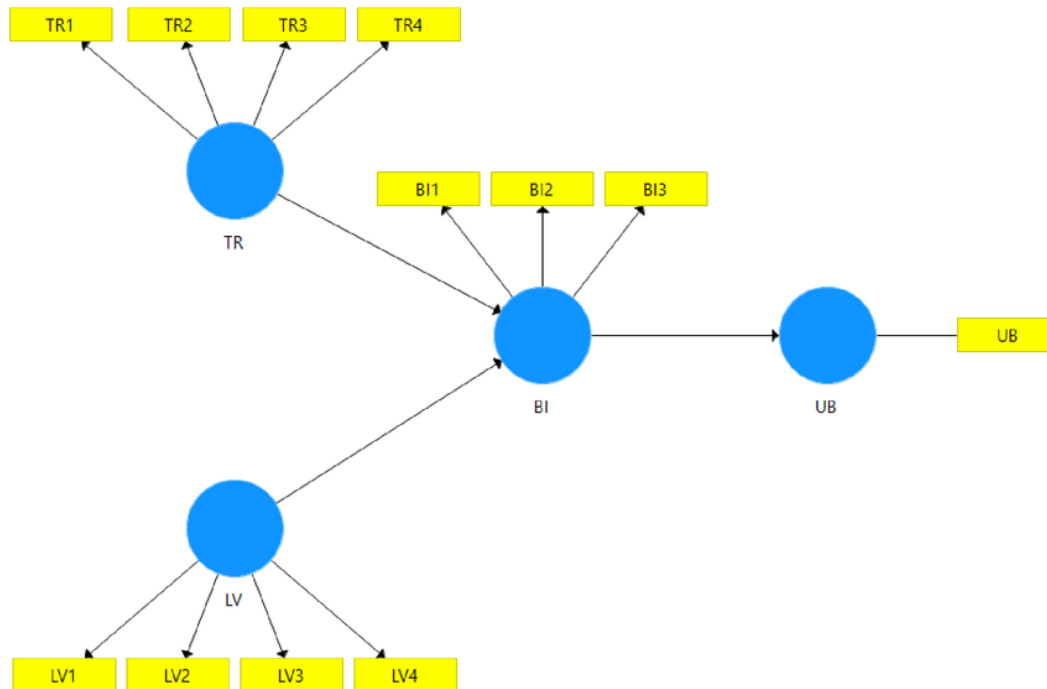


Figure 3. Measurement Model

#### Indicator Reliability.

The first step in evaluating the reflective measurement model is to do a reliability indicator check. The process carried out at this stage is to see the value of outer loading (loading factor). An indicator is declared good if it has an outer loading value  $> 0.7$ . The measurement results for outer loading are shown as in Table 3 where all indicators are declared good.

Table 3.  
Value of Convergent Validity Test (Outer Loading)

Indicator	Value	Indicator	Value	Indicator	Value
BI1	0.885	LV2	0.843	TR2	0.829
BI2	0.909	LV3	0.812	TR3	0.843
BI3	0.876	LV4	0.774	TR4	0.837
LV1	0.749	TR1	0.847	UB	1

#### Internal Consistency Reliability.

The process of internal consistency reliability in this study is done by examining the Cronbach's Alpha value as the lower limit and Composite Reliability (19) as the upper limit. The interpretation of this value is if the values of Cronbach's Alpha and Composite Reliability  $> 0.7$ , the 19 struct is stated to have good reliability. From the value based on Table 4 it can be seen that the results of the internal consistency test for each variable have good reliability.

Table 4.  
Value of Internal Consistency Test

Indicator	Cronbach's Alpha	Composite Reliability
BI	0.869	0.92
LV	0.806	0.873
TR	0.86	0.905
UB	1	1

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#### Coefficient of Determination ( $R^2$ ).

The value of  $R^2$  is used to determine the predictive strength of the structural model. It can be used the  $R^2$  value of each variable [25].  $R^2$  results from this study are presented in Table 7.

Table 5.  
 $R^2$  Value of Endogenous Variable

Variabel	R2	Keterangan
Behavioral Intention (BI)	0.527	Sedang/Moderate
Use Behavior (USE)	0.101	Lemah

#### F-Square Variable Effect ( $f^2$ ).

To measure the effect of each model path can be determined by calculating Cohen's value  $f^2$ . The  $f^2$  effect value  $< 0.02$  indicates no effect. The  $f^2$  test results from this study are shown in Table 6.

Table 6.  
 $f^2$  Variable Effect Test Results

Variabel	R2	Keterangan
BI $\rightarrow$ UB	0.047	weak effect
LV $\rightarrow$ BI	0.149	weak effect
TR $\rightarrow$ BI	0.04	weak effect

#### C. Hypothesis Test

Based on the testing of the path coefficient significance using bootstrapping that has been done in the previous stage, it can be determined whether the hypothesis is declared significant or not significant. The criteria are alpha ( $\alpha$ ) = 0.05 then the path coefficient is considered significant if the value of t-statistic  $\geq 1.96$  and the value of p-value  $\leq 0.05$ . The results of hypothesis testing based

	T-Statistics	P-Values	Hypothesis	Description
BI > UB	5.252	0.000000223	H1	significant
LV > BI	11.354	0.00000000000000560	H2	significant
TR > BI	3.768	0.000184	H3	significant

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graph LR
    TR((TR)) -- 3.768 --> BI((BI))
    LV((LV)) -- 11.354 --> BI
    BI -- 5.252 --> UB((UB))

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## V. CONCLUSION

Based on the results of the analysis that has been carried out in this study, it can be concluded that the learning value and 2<sup>nd</sup> factors have a significant effect on the acceptance of the use of online learning technology.

Formulation of research problems, making a research model framework, collecting and analyzing data, and documenting research results in a limited time led to limitations in the scope and size of this study. Therefore, future research can continue our research using different methods and indicators, more sample sizes, or adoption of other technology platforms.

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# Online Learning

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