**STRUCTURAL EQUATION MODELING (SEM) FOR ANALYZING THE TECHNOLOGY ACCEPTANCE MODEL (TAM) OF SUDENTS IN ONLINE TEACHING DURING THE COVID-19 PANDEMIC**

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| **Article Info:**  Received:  Accepted:  Available Online:  **Keywords:**  Learning Management System (LMS), SYAM-OK, Technology Acceptance Model (TAM), and Structural Equation Modeling (SEM)  *.* | **Abstract:** The impact of the coronavirus disease (Covid-19) is being felt by the education world. As an effort by the Indonesian government to stop spreading the Covid 19 infection, then an announcement Letter with Law Number 4 of 2020 was issued by the Ministry of Education and Culture (MOEC) which explains and warns that Universities do not carry out face-to-face in teaching activities. Online Teaching, it can be a solution for teaching during a pandemic. One of the tools used in conducting online teaching activities is the learning management system (LMS). UNM Makasassar as an educational institution provided a learning management system (LMS) to support the teaching and learning process with the platform name is system application management of open knowledge (SYAM-OK). SYAM-OK is a learning system that can be used online, blended, or fully online. In this article, we examine the behavioral model of a student's acceptance of the use of an information system in this case SYAM-OK in online teaching by using the technology acceptance model (TAM). We determine the responses of students that previously, they are using only the delivery face-to-face teaching and then they became full online teaching. The data used in this study is primary data. There are 120 students as the sample. The data was obtained from an online questionnaire using a google form whose contents were related to online learning using the SYAM OK platform. There are 5 TAM variables, in this case, namely: perceived ease of use (X1), perceived usefulness (X2), attitude towards (X3), behavioral intention (X4), and actual use (X5). The structural equation modeling (SEM) PLS method is using in this article for analyzing the data. SEM is using to confirm the validity of indicators for each TAM variable and modeling the relationship between TAM variables. Based on the results of the SEM we conclude that all indicators of latent variable TAM are valid and reliable with the loading factor of indicator for each laten variable are >0.5. The structural model of SEM obtained in this result is  Y = 0.229X1+0.571X2+0.639X3+0.249X4+0.026X5.  With the bootstraping and using T statistics we conclude that the perceived usefulness (X2) is significantly affects the attitude towards (X3) and also attitude towards (X3), is significantly affects the behavioral intention (X4) . The student's semester achievement index can be explained by the attitude towards (X3 ) as much as 54.10%, and by the behavioral intention (X4) as much as 40.80%. |

1. **INTRODUCTION**

The Covid-19 pandemic since December 2019 has had a major impact on various fields, including the education sector. The increasing number of cases of contracting and dying from Covid-19 every day, has made the government set several regulations and policies to continue to comply with health and safety protocols. The Indonesian government, both central and rRegional, sets regulations to limit community activities that have the potential to make direct contacts, such as social distancing, work from home (WFH), and online teaching. The letter with law number 4 of 2020 by the Ministry of Education and Culture (MOEC) which explains that universities should not carry out face-to-face learning. Even though this circular is issued, it does not mean that the teaching and learning process or lectures will be completely halted. So that since March 2020, every learning activity has been conducted online.

Online Learning (E-learning) is an information technology in the field of education in virtual form, with learning using certain electronic media as an intermediary in delivering learning materials. E-learning as an application of educational technology deserves further use by educational institutions because of its existence which is a new innovation in helping student learning (Munir, 2009). The existence of E-learning helps the learning process without the need for direct interaction between lecturers or between lecturers and students, so that it is effective in learning (Hussein, 2017). In online learning, students and teachers can interact through applications such as classrooms, video conferencing, telephone, live chat, zoom, or the use of whatsapp groups. Over time, technology in the world of education began to develop learning media, including universities in Indonesia which developed their own educational technology as an innovation in increasing effectiveness in the teaching and learning process. A device used to carry out administrative purposes in teaching and learning activities is also called a Learning Management System (LMS). LMS is software that is used to create online learning materials and manage learning activities and results, which also has features that can meet the needs of users in terms of learning (Hanum, 2013). Each educational institution can create and develop its own LMS in accordance with the desired facilities that can provide easy access to teaching and learning, as well as packaged in the form of multimedia.

Since 2006, UNM Makassar has released an online learning system under the name elearning.unm.ac.id. then August 19, 2020 UNM launched its LMS under the name “System Application Management of Open Knowledge”, abbreviated as SYAM-OK. SYAM-OK is a learning system that can be used online, blended, or fully online equipped with features for class creation, class management, material management, assessment activity management, and monitoring. These features are expected to provide convenience for students and lecturers in the lecture process.

According to Kang (1998) the establishment of a new information system in an organization will affect the entire organization, especially in its human resources. SYAM-OK as a new information system specially in online learning system bring big hope for the convenience of students and lecturers in the lecture process as expected. The success of the development of this information system include SYAM-OK is dependent on the level of user acceptance of the information system, in this research case are students. One of the model to analyze the factors that influence the behavior of information technology users towards information technology is Theory of Acceptance Model (TAM). TAM was first introduced by Fred D. Davis in 1986 which is an adaptation of the Theory of Reasoned Actional (TRA) which was made specifically for modeling the acceptance behavior of an individual towards the acceptance of the use of information systems (Ajzen & Fishbein, 1980). TAM aims to explain the external factors of the behavior of information technology users on the acceptance of information technology itself. TAM explains the development of technology from two main factors, namely perceived usefulness and perceived ease of use, and both will affect other variables in stages to actual use.

In this article, there is also student’s semester achievement index (IPS) variable as an additional variable to see the influence of the TAM modeling, especially for actuals use (X5) variable. Research related to TAM in online learning has been widely carried out by previous researchers, including Alfian and Tjahjadi (2019) about Technology Acceptance Models in E-Learning Systems who see the variables that influence e-learning acceptance at STMIK Bina Insani include: perceived usefulness, perceived easy of use, attitude toward using, behavior intention to use, actual usage, quality system, and social factors. Rahmawati and Narsa (2019) regarding actual usage of E-Learning use with TAM where the results of their research show that perceived usefulness has no effect on actual usage, and perceived ease of use has a significant relationship to intent to use. Research conducted by Jumardi (2020) where the results of his research prove that perception of usefulness, ease of use have a significant influence on attitude behavior, behavioral intentions, real use of the system, and in general users can accept also use E-Learning in the implementation of learning.

In this research, we interest in analyzing the student's behavioral intention since they use online teaching with the title "Structural Equation Modeling (SEM) for analyzing the Technology Acceptance Model (TAM) of Students in online teaching During the COVID -19" pandemic

1. **LITERATURE REVIEW**
   1. **Structural Equation Modeling (SEM)**

Structural equation modeling (SEM) is a multivariate analysis technique that combines factor analysis methods, regression analysis, and path analysis to measure the relationship between variables simultaneously (Hair et al, 2010), (Bollen, 1989). SEM consists of two parts, namely: a measurement model section that describes the relationship between indicator variables and latent variables, and a structural model section that describes the relationship between latent variables.As an alternative, SEM is developed with a variance or component approach, which is sometimes called the PLS approach or known as component based SEM. Covariance-based SEM is more oriented to model building which is intended to explain the covariance of all observed indicators, while component-based SEM can analyze as well as variables formed with reflective and formative indicators. The PLS approach began to be used in path modeling in 1980 (Wold, 1980).

The first component of SEM is structural model, Bollen (1989) wrote the structural model as follows

                                  (1)

where **η** is the endogenous latent variable of size, **ξ** is the exogenous latent variable, **B** is the coefficient matrix that shows the influence between endogenous latent variables, and **ζ** is a random error which has an expected value equal to zero. Given two equatios as follows:

**** (2)

**** (3)

From the Equation (2) and Equation (3) we can written in matrix form as follows:

****      (4)

To evaluation of structural model is done by looking at the R-Square. Structural models can be evaluated by observing the significance of the relationship between latent variables. This can be seen from the path coefficient which describes the relationship between latent variables. These results can be obtained from the boostrapping process (Andreas, et.al., 2021).

The second component of SEM is the measurement model which is written as follows:

****      (5)

****  (6)

Where **x** with size *p*x1 and **y** with size *q*x1 are vectors of observed variables. **Λx** with a size of *p*x*m* and **Λy** with a size of *q*x*n* respectively is a coefficient matrix that shows the relation from x to **ξ** and y to **η**. Sequentially **δ** with size *p*x1 and **ε** with size *q*x1 are the measurement errors of **y** and **x**. Measurement model or outer model is used to present the relationship between the latent variable construct and its measurement (indicator). There are two methods to evaluate the measurement model, namely the convergent validity of the indicators and composite reliability. Convergent validity is a test that aims to determine the ability of an indicator to measure latent variables (Bollen, 1989). Convergent validity can be seen from the standardize loading factor value for each construct indicator. The indicator variable is said to be significant as an indicator that measures the construct if the loading factor value is more than 0.7 for confirmatory research, and 0.6 for explaratory research. However, loading factor values ​​above 0.5 are acceptable, and values ​​below 0.5 are excluded from the model (Chin, 1998). Composite reliability is a test carried out with the aim of proving the accuracy, consistency, and accuracy of an instrument in measuring the construct. To measure whether an indicator can reliably measure a construct, the variance based structural equation can be done by measuring the reliability of the composite or construct. An indicator is said to be a good constructor (reliable) if it has a correlation value of more than 0.7 (Chin, 1998).

* 1. **Technology Acceptance Model (TAM) and Online Learning**

Technology Acceptance Model (TAM) was first introduced by Fred D. Davis in 1986 which is an adaptation of the Theory of Reasoned Actional (TRA) which was made specifically for modeling the acceptance behavior of an individual towards the use of information systems (Ajzen & Fishbein, 1980). TAM aims to explain the factors of the behavior of information technology users on the acceptance of information technology itself. TAM explains the acceptance of information technology using certain dimensions that can affect whether or not the information technology is accepted by users. According to Davis (1989) TAM aims to explain and predict the level of use of users in accepting a technology. TAM is considered capable of predicting user acceptance of technology based on the impact of two factors, namely perceived usefulness and perceived ease of use.

The original constructs of TAM formulated by Davis (1989) are perceived usefulness and perceived ease of use, attitudes, behavioral intentions, actual usage, and There are external factors, namely experience and complexity.Perceived usefulness describes the level of someone believe that the use of the system will improve its performance, in other words able to provide the use of use when used it can be functioning in accordance with the goal. Benchmark of this perception is seen from the frequency or how often someone is using the system (Davis, 1989). According toVenkatesh and Davis (2000) Perception ease of the use describes a person's confidence level that the use of information systems is a thing easy and do not require a hard effort from the wearer. Attitude toward use is a tendency of early response to the condition fun and unpleasant on acertain objects. Behavioral intent is a tendency to behave to apply a technology and the real use of a system is a real condition application system.

E-learning is a form of information technology that is applied in the field of education in the form of a virtual world, with learning using electronic media or certain devices as intermediaries to deliver learning materials. E-learning is generally a website where users interact with each other like social media sites. E-learning as an application of educational technology deserves to be further utilized by educational institutions because its existence is a new innovation in helping students learn (Munir, 2009). The existence of e-learning helps the learning process without the need for direct interaction between lecturers or lecturers with students, so that learning effectiveness can be further enhanced by the existence of a question and answer forum and easy access to learning materials (Hussein, 2017).

According to Pasaribu (1983) learning achievement is the result that has been achieved by someone after attending the education and training program. Learning achievement is the maximum result that has been achieved by someone after carrying out learning efforts. (Winkel, 1996). Learning achievement is the result of all activities carried out by students, both from learning, experience, and training from an activity. To find out the results of learning, a measuring instrument for the orestasi test was made. The measurement results of learning outcomes tests can be expressed in the form of quantitative values ​​in the numbers 0 to 4 or A, B, C, D, and E. The levels of these tests are arranged according to ranking and formulated in the form of a Party Index (IP) (Asrib & Haedir, 2016). The evaluation of learning outcomes for each subject programmed by students in one semester must be given a value as an evaluation of learning outcomes, which is carried out periodically which can take the form of exams, assignments, and direct observation by lecturers. The exams are conducted in the form of semester exams and final exams for study programs, and learning outcomes are a reflection of aspects of knowledge, attitudes, and skills.

1. **MATERIAL AND METHOD** 
   1. **Data**

In this study is using primary data. Data is collect through online questionnaire survey by using google form with the content about TAM in online learning with SYAM-OK. The population in this study were students of the Statistics Study Program, Faculty of Mathematics and Natural Sciences, with the sample are 120 students of 2018 and 2019 generation in the Even Semester of the 2020/2021 Academic Year. Samples were selected by purposive sampling. These two generations were chosen with reason that they were considered students of the Statistics Study Program, FMIPA UNM, who had conducted offline learning before the Covid-19 Pandemic, and then in the Even Semester of the 2020/2021 Academic Years became using online learning.

* 1. **Research Model**

This study uses a quantitative approach. The type of research used is ex-post facto.The research model (Figure 1) was adopted from TAM, which has five factors namely perceived usefulness, perceived ease of use, attitude towards use, behavioral intention to use, and actual use. The questionnaire has been filled out by 120 students of the Statistics Study Program, FMIPA UNM.

Preceived Ease of Use (X1)

Preceived Usefulness (X2)

Attitude Towards (X3)

Behavioral Intention to Use (X4)

Actual Use (X5)

**Figure 1.** Research Model

* 1. **Analysis Method**

Observable random variable  with size is the component that has a vector mean  and covariance matrix .  linearly dependent on some unobserved random variable , ,…, which is called the latent variable. The source of variation  is called error which is sometimes also called special factor. Here the model of exploratory factor analysis in Equation (7).

 (7)

The form (7) can be written in matrix form as follows

 (8)

Coefficient  is a loading factor of the *i*-th variable on the *j* factor. Some assumptions about random variables and those that affect the covariance structure are: ,,

The covariance variance matrix for the exogenous latent variable indicator is:



 (9)

Confirmatory factor analysis (CFA) in SEM is used because there is already theoretical information on the general structure of the pattern data and wants to match or deny a structure that has been hypothesized. The measurement model in CFA for exogenous latent variable is (Ruliana et al, 2015)

 (10)

where  is a vector of size  from observation score,  is a vector of size  of latent factor score. The point in confirmatory factor analysis is a relevant theory that allows researchers to determine the data structure before the process of estimating parameter **B**, **Φ,** and **Ψ**. Given the measurement model of the exogenous latent variable as follows

 (11)

Equation (11) can be written in the following matrix form:

 (12)

where

, , , , 

with , , 

Given the measurement model of the endogenous latent variable as follows (Ruliana et al, 2015):

**** (13)

Equation (13) can be denoted in the form of a matrix which is written as:



, , ,  (14)



with , , 

In the structural equation model there is a coefficient that connects the latent variable to their indicator. It is the loading coefficient which notation “lambda” (λ) . lambda for exogenous latent is:

 (15)

and for endogenous latent is

 (16)

The step of analysis are:

1. Describing the TAM variable: Perceived Ease of Use (X1), Perceived Usefulness (X2), Attitude toward to use (X3), Behavioral Intention (X4) and actual Use (X5)
2. Testing the Validity of the TAM Variable Indicator with provision: if loading factor then the indicator is valid to measure the latent variable. If cross loading of indicator with their laten variable have loading factor greater than loading factor another laten variable then the indicator is accurate to measure the variable
3. Testing the structural model by using boostrap and statistic T
4. Estimate the parameter structural model
5. Evaluated the performance model.
6. **RESULTS AND DISCUSSION**

Based on the data analysis, from 120 students of statistics study program who filled out the questionnaire there are 33 or (27.5%) female students and 87 or (72.5%) male sudents. Descriptive statistics of the Achievement Index scores are shown in Table.1.

**Table. 1** Descriptive Statistics of Achievement Student’s Scores

|  |  |
| --- | --- |
| **Statistics** | **Score** |
| Mean | 3.69 |
| Variance | 0.027 |
| Range | 0.74 |
| Minimum | 3.26 |
| Maximum | 4 |

Based on the results of the descriptive analysis in Table 1, we know that mean score of the student achievement index is 3.69, and the minimum score is 3.26 and the maximum score is 4. Descriptive statistics of student’s score TAM in learning by using SYAM-OK and ideal score of student about TAM respectively are shown in Table.2 and Figure 1.

**Table 2.** Descriptive Statistics of Student’s Score TAM in Learning Online with SYAM-OK

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable** | **Statistics** | | | | |
| **Minimum** | **Maxsimum** | **The average** | **SD** | **Variance** |
| Perceived Ease of Use (X1) | 12 | 30 | 22,95 | 3,100 | 9,611 |
| Perceived Usefulness (X2) | 11 | 30 | 21,19 | 3,699 | 13,686 |
| Attitude toward to use (X3) | 4 | 12 | 9,63 | 1,251 | 1,564 |
| Bihavioral Intention (X4) | 8 | 24 | 15,83 | 3,218 | 10,359 |
| Actual Usage (X5) | 3 | 10 | 7,21 | 1,499 | 2,009 |

**Figure 1**. Ideal Score of Student About TAM in Learning Online with SYAM-OK

Table 2 and Figure 2 shows that the perceived ease of use (X1) with a minimum score is 12 , maximum score is 30, and the mean score is 22.95. Perceived usefulness (X2) with minimum score is 11, maximum score is 30, and the mean score is 21.19. Attitude toward of use (X3) with minimum score is 4, maximum score is 12, and the mean score is 9.63. Behavioral intention (X4) with a minimum score is 24 and mean score is 15.83. The actual usage (X5) with minimum response score is 3, maximum score is 10 and mean score is 7.21.

SEM Model for of the calculation of the model, factor loading values shown in Figure 2 and Table 3.



**Figure 2**. Result of Structural Equation Modeling for Calculating Loading Factor and Parameter Coeficient of TAM Variable

**Table 3.** The Value of Outer loading SEM-PLS

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Indicator** | **Outer loadings** | **Conclusion** |
| (X1) | X11 | 0,698 | Valid |
| X12 | 0,719 | Valid |
| X13 | 0,766 | Valid |
| X14 | 0,551 | Valid |
| X15 | 0,552 | Valid |
| X16 | 0,753 | Valid |
| (X2) | X21 | 0,801 | Valid |
| X22 | 0,719 | Valid |
| X23 | 0,846 | Valid |
| X24 | 0,849 | Valid |
| X25 | 0,654 | Valid |
| X26 | 0,811 | Valid |
| (X3) | X31 | 0,904 | Valid |
| X32 | 0,907 | Valid |
| X33 | -0,745 | Valid |
| (X4) | X41 | 0,755 | Valid |
| X42 | 0,829 | Valid |
| X43 | 0,824 | Valid |
| X44 | 0,856 | Valid |
| X45 | 0,730 | Valid |
| (X5) | X51 | 0,843 | Valid |
| X53 | 0,873 | Valid |

Based on Table 3 and Figure 3, it can be seen that for the latent variable perceived ease of use (X1) all indicators have a loading factor value >0.5 with details X11 with a loading factor is 0.698, X12 with a loading factor is 0.719, X13 with a loading factor is 0.766, X14 with a loading factor is 0.551, X15 with a loading factor is 0.552, and X16 with a loading factor is 0.753. These values ​​explain that all indicators of the latent variable X1 are valid in measuring the latent variable, this is supported by the accuracy value of the variable X1 in Table 4 which shows that the composite reliability value is 0.835 which means means that the measurement value of the latent variable X1 is accurate. Furthermore, for the latent perceived of usefulness (X2) all indicators have a loading factor value > 0.5 with details X21 with a loading factor is 0.801, X22 with a loading factor is 0.719, X23 with a loading factor is 0.846, X24 with a loading factor is 0.849, X25 with a loading factor is 0.654, and X26 with a loading factor is 0.811. These values ​​explain that all indicators of the latent variable X2 are valid in measuring the latent variable, this is supported by the accuracy value of the X2 variable in Table 4 which composite reliability value is 0.904 which means that the measurement of latent variable X2 is accurate. For latent variable attitude toward of use (X3) all indicators have a loading factor value > 0.5 with details X31 with a loading factor is 0.904, X32 with a loading factor is -0.745. These values ​​explain that all indicators of the latent variable X3 are valid in measuring the latent variable, this is supported by the accuracy value of the variable X3 in Table 4 which composite reliability value is 0.586 which means that the measurement value of the latent variable X3 is accurate. For the latent variable behavioral intention (X4) all indicators have a loading factor value > 0.5 with details X41 with a loading factor is 0.755, X42 with a loading factor is 0.829, X43 with a loading factor is 0.824, X44 with a loading factor is 0.856, and X45 with a loading factor is 0.730. These values ​​explain that all indicators of the latent variable X4  are valid in measuring the latent variable, this is supported by the accuracy value of the X4 variable in Table 4. which composite reliability value is 0.899, which means that the measurement value of the variable X4 is accurate. For the latent variable actual usage (X5), the indicator has a loading factor value > 0.5, namely X51 with a loading factor is 0843 and X53 with a loading factor is 0.873. These values ​​explain that all indicators of the latent variable X5 are valid in measuring the latent variable, this is supported by the accuracy value of the variable X5 in Table 4. which composite reliability value is 0.851 which means that the measurement value of the variable X5 latent is accurate.

**Table 4.** The Result of Compostite Realityibility Testing

|  |  |
| --- | --- |
| **Variable** | **Composite Realibility** |
| Perceived Ease of Use (X1) | 0,835 |
| Perceived Usefulness (X2) | 0,904 |
| Attitude toward to use (X3) | 0,586 |
| Bihavioral Intention (X4) | 0,899 |
| Actual Usage (X5) | 0,851 |

To modeling the latent variables of TAM and the Semester Achievement Index (IPS) we using regression analysis concept, and the result are shown in Table 5. From Table 5 it is known that the latent variable perceived ease of use (X1) with a parameter coefficient is 0.229 and T statistic is 1.742 not significantly affects the latent variable attitude toward of use (X3). Meanwhile, the latent variable perceived usefulness (X2) with a parameter coefficient is 0.571 and T statistic is 4.689 it means that perceived usefullness is significantly effect the attitude towards, beside that attitude toward (X3) on the latent variable behavioral intention (X4) with a parameter coefficient is 0.639 and T statistic is 6.916 it means that X3 variable significantly effect on X4. While for the latent variable behavioral intention (X4) on the latent variable actual usage (X5) with a parameter coefficient is 0.249 and T statistic is 1.564 it means that the latent variable X4 not significantly affects on the latent variable X5. Other side latent variable actual usage (X5) on semester achievement index (IPS) with a parameter coefficient is 0.026 and T statistic is 0.152 it means that the latent variable X5 not significantly affects on IPS.

**Table 5.** Structural Model SEM of TAM Variable

|  |  |  |  |
| --- | --- | --- | --- |
| **Path Connection** | **Parameters estimates** | **Standard deviation** | **T statistics** |
| X1-> X3 | 0,229 | 0,132 | 1,742 |
| X2-> X3 | 0,571 | 0,122 | **4,689** |
| X3-> X4 | 0,639 | 0,092 | **6,916** |
| X4-> X5 | 0,249 | 0,159 | 1,564 |
| X5-> IPS | 0,026 | 0,174 | 0,152 |

Based on Table 5, it can be written the TAM measurement model in online learning with SYAM-OK for students of Statistics Study Program, FMIPA UNM as follows:

|  |  |
| --- | --- |
|  | (17) |

The accuracy of this model evaluated based on the R-Square of the structural model. The R-Square of the structural model can be shown in Table 6.

**Table 6.** R-Square Value

|  |  |
| --- | --- |
| **Variable** | **R-square** |
| Attitude toward to use (X3) | 0,541 |
| Behavioral Intention (X4) | 0,408 |
| Actual Usage (X5) | 0,062 |

Based on Table 6 it is known that R-Suare of the latent variable attitude toward (X3) is 0.541 or 54,10% attitude toward can be explain by the X1 and X2. The latent variable behavioral intention (X4) is 0.408 or 40, 80% behavioral intention can be explain by X3. The latent variable actual usage (X5) is 0.062 or 6,20% actual usage can be explain by X4.

1. **CONCLUSION**

Based on the results of the analysis above then the following conclusions can be drawn that all indicators of the latent variables in TAM, namely perceived ease of use (X1), perceived usefullness (X2), attitude toward (X3), behavioral intention(X4) and actual usage (X5) are valid and accurate to describing learning using SYAM-OK of students at Statistics Study Program, FMIPA UNM. The SEM model is Y = 0.229X1+0.571X2+0.639X3+0.249X4+0.026X5, with the variable perceived usefulness (X2) is significantly affects the variable attitude toward (X3) and also variable attitude toward (X3) is significantly affects the variable behavioral intention (X4) . The student's semester achievement index can be explained by the attitude toward (X3 ) as much as 54.10%, by the behavioral intention (X4) as much as 40% and by actual usage as much as 6%.

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