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Influence of The Use Of E-Learning And Interpersonal Communication Lecturer on Learning Motivation and Student Engagement in A Number of University in Sumatra

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ABSTRACT

This study aims to analyze the influence of e-learning usage, lecturer interpersonal communication, learning motivation, and student engagement in several universities in Sumatra. This study used a quantitative approach and the data collection technique involved the distribution and collection of questionnaires (broadcasting) through Google Form. The respondents selected for this study were students at several universities in Sumatra, from a total population of 1000 with a sample size of 200. The data analysis technique used in this research is Partial Least Squares-Structural Equation Modeling (PLS- SEM) to develop a model that describes the relationship between variables. The results of this study show that, in the first hypothesis, the use of e-learning has a P value of 0.000, which indicates a significant influence on student learning motivation. In the second hypothesis, the use of e-learning has a P value of 0.000, which also shows a significant influence on student engagement. The third hypothesis, interpersonal communication has a P value of 0.000, which indicates a significant influence on student learning motivation. The fourth hypothesis, interpersonal communication has a P value of 0.000, which shows a significant effect on student engagement. Finally, the fifth hypothesis, learning motivation, has a P value of 0.000, which shows a significant influence on student engagement. Therefore, this study concludes that, the use of e-learning and lecturers' interpersonal communication have a significant impact on learning motivation and student engagement in several universities in Sumatra. In addition, learning motivation also directly contributes to student engagement.

INTRODUCTION

Along with developments in technology and times, learning facilities are needed that provide comfort and convenience for continuous improvement in particular use of ICT and internet. Using information and communication technology in conjunction with the concept of e-learning as a current teaching medium in higher education institutions Encouraging students to become more independent and active (Nuraeni, YS, et al. 2022). According to Daryanto (2016), "learning media is an important component of the education system." Every

day the resources needed to interact with students are available in the media, including hardware such as computers and projectors (Ferdiansyah & Septiani, 2023).

Zaheer Abbas in Ratnaduhita et al., (2023) explains that Electronic Learning (E-Learning) is an educational media application from the internet which is a series of software and processes that require electronic media and tools that are available to deliver education and vocational training. In other words , e-learning is a collection of procedures and applications that require electronic media and devices to support education. There are many benefits provided by e-learning, including cost efficiency, flexibility, and internet accessibility. In addition, the use of e-learning can simplify the process of creating teaching materials, facilitate interaction between lecturers and students, and can increase accessibility in terms of education (Clark & Mayer, 2016).

The most important factor to increase student motivation and engagement during the learning process is effective interpersonal communication between teachers and students. If so, then using e-learning in the classroom can be easily implemented by teachers and students, which will reduce students' motivation to learn otherwise the opposite will happen. According to Kompri (2016:1), motivation is an effort made by a person to achieve certain goals to fulfill aspirations. This research is consistent with Uno (2011: 15), who states that learning involves interaction between students and teachers in the process of acquiring knowledge. Learning motivation is the entire learning process in the student's mind which creates learning activities, which ensures that learning objectives are met, and which provides guidance for learning activities so that the learning objectives set by the learning subject can be achieved (Hamdu & Agustina, 2011). Meanwhile, learning is a process carried out by individuals to capture new and comprehensive changes in their language as a result of their own experiences interacting with their environment (Karso, 2019). One of the main educational strategies is motivation. In the field of education, motivation is very important because it can help students become more self-aware and have more positive learning goals. This can also help students complete their current courses according to the specified reading and learning goals (Saptono, 2016).

Lecturers and students are two factors that are closely related to each other or can be interpreted in terms of symbiotic mutualism the two must balance each other and have a positive relationship between the two components to achieve their common goals. This must be considered during the learning process, where lecturers and learning (Johnson, DW, & Johnson, RT 1999). Lecturers must be able to create effective interpersonal communication, especially when teaching in class or through online learning. This type of communication can help students understand what needs to be done and how to handle the situation that occurs (Aisyah, A., et al. 2023). According to findings from a study conducted by Fathurrohman (2018), it can be concluded that there is a significant and positive influence of interpersonal communication between lecturers and students on student learning outcomes. In higher education, effective communication between lecturers and students will increase the level of good and high quality student academic achievement.

On the other hand, poor communication between lecturers and students can also have a negative impact on student academic performance (Strydom & Mentz, 2010). Developing a South African Survey of Student Engagement (SASSE): Fostering educationally purposeful activities to impact student learning. Higher Education Monitor, 11. In the context of the use of e-learning and interpersonal communication of lecturers in higher education, it is important

to emphasize that learning outcomes depend not only on advanced technology but also on student-teacher interactions (Anderson & Dron, 2011). Good communication between the two can provide strong motivation for students to be actively involved in the learning process . Therefore, the aim of this research is to determine the influence of the use of e-learning and lecturer interpersonal communication on student motivation and student engagement. It is hoped that the research findings will be useful in raising quality standards in higher education and support efforts to improve the overall quality of education.

1.1 Theoretical Foundations

1. E-learning

According to Daryanto (2011: 168) say e-learning is Study Which No use media print on material Which be delivered. He say that e- learning is method Which flexible For Study, Because lecturer nor student can with easy access e-learning without hindered time nor place For they make learning easier, besides that e-learning can make performance easier from lecturers because they can design learning well so that learning not only limited to learning, but can also be entertainment. Meanwhile Dewi SP (2012: 76-77) say that e-learning is part from process study with utilise computer And multimedia. Prasojo And Riyanto (2011: 7) said that e-learning is internet-based or online learning. The internet requires media that can facilitate the learning process Later it will be used by educators and practitioners with the aim of collecting information continuously.

In addition, e-learning can provide information related to course material so that students can view it in an electronic-based learning environment. E-learning nature open, lecturer can free in designing learning Which desired. Will but design learning the Also later it must be equally understandable by students, so that students can understand it easy to understand with the learning media used by lecturers, it will increase students' enthusiasm for learning. E-learning is a a form of technology to increase learning knowledge, both educators and participant educate. E-learning This Also is form from A innovation media learning Which can designed with Good, can accessed When And Where just.

2. Communication Interpersonal

In the large Indonesian dictionary, the word interpersonal consists of two words, namely "inter" means a bond between two people, and "personal" means an individual or personal. According to Usep And Yosal (2012: 21) say that communication interpersonal not only involve two just people, will but Can Also with small groups that have the opportunity to talk and listen to each other so that a friendly atmosphere can be created, according to Irantara (2014: 94) communication Interpersonal is communication that occurs between two people who interact in the same time. This interaction can be carried out not only through words, words, but also through eye contact, smiles, and facial expressions. One aspect Which influenced by communication is interrelationship man. Interpersonal communication is communication that is closely related to humans, Wrong or expert Which define communication interpersonal is Mohammed (2020 : 14) say that communication interpersonal is something form communication regulated by relationship norms. Usually interpersonal communication This kind of thing happens in relatively small groups.

According to Muhammad (2007: 11) say that communication interpersonal is two person Which each other communicating or the process of exchanging meaning. Soyokumti

(2010: 141) defines communication interpersonal is process from interaction between individual with Other individuals can use symbols or communication between humans Which using language. Komala (2009: 163) suggests that interpersonal communication is the process of making small conversations between people who are communicating with each other. Interpersonal communication refers to direct interaction between two or more people, allowing the recipient of the message to respond directly. It is clear from the explanation above that interpersonal communication is defined as two people or a small group of people who regularly interact with each other.

3. Motivation Study

Octavia. I (2015:13) said: "Motivation in Latin is "movore", Which It means motion or encouragement". In Dictionary Big Language Indonesia (KBBI) Motivation refers to a person's drive to achieve a certain goal aware or No aware. Motivation can be divided into two categories based on their characteristics: intrinsic motivation, which originates from one's own motivation, and extrinsic motivation which originates from one's environment. Meanwhile, according to Sardiman's definition (2014:73) Motivation is the state of encouraging individuals or groups of people to do something to achieve the goals they want to achieve as individuals or as a group. Hamalik (2001) Motivation is a change in a person's internal energy which is characterized by the emergence of a desire or reaction to achieve a goal. Included in motivation are desires, fears, needs, goals, aspirations and incentives. Motivation is change energy from somebody Which can generate enthusiasm for an activity, whether it comes from internally (internal motivation) and external (external motivation), According to Kartal & Uner (2017), students cannot learn if they are not motivated or given motivation. From the explanation above, it can be concluded that learning motivation is desire, encouragement, desire to achieve something the goal of good learning, this encouragement can come from within oneself, person others, as well as the surrounding environment.

4. Involvement Student

When compared with those who are not involved in learning activities as mentioned above, students who are involved in them, especially in class, are more likely to show satisfactory performance. (Hyde, 2009). Student Engagement is described as the level of interest demonstrated by students, in increasing their motivation to learn about learning topics and the way they interact with other people in lectures. Students' level of interest, how to interact with other people, and motivation to learn, can be described by the level of interest. College students have the ability to express a strong desire to learn, a desire to learn more, and positive and emotional responses about education and school. (Gibbs & Poskitt, 2010). Student engagement can be defined Based on the time and resources provided by students for specific learning activities, schools hope to encourage students to participate in those activities (Kuh, 2009). Wilms (2003), suggests that increasing student engagement in the classroom will have a positive impact on quality of life in adolescence . In an educational context, student participation both inside and outside the classroom is very important. This is because the required student participation makes it necessary to increase student engagement because, when students are involved in classroom activities, they are encouraged to grow and develop in an optimal way so that, ultimately, they have a fulfilling life.

METHODS

1. RESEARCH METHODS

This research uses quantitative research methods with research subjects student in a few university in Sumatra. Quantitative research prioritizes systematic, planned, clearly structured aspects from the beginning of the research design, starting from research objectives, topics, population identification, data sources and methodology, and ending with data analysis. Understanding This in line with surhasono (2009) This understanding is in line with Surhasono (2009) defines quantitative research as research that is more specific, systematic, structured, clearly planned, starting from the background, determining themes and research points, to collecting, analyzing and investigating the methodological data used. Sugiyono (2018) further explained that quantitative methods are a research approach rooted in the philosophy of positivism which is used to study populations and samples.

Technique or method In this research, data collection was carried out using a questionnaire. (questionnaire). which is distributed through technology in the form of a platform Google Form, so here the questionnaire can be distributed online to respondents. This instrument is a questionnaire consisting of respondent numbers, statements and alternative answers that select five options, while the data collection process was carried out with 200 respondents. The purpose of this study was to determine the sample size that researchers were confident using G Power. The results show that the overall sample size (200) is less than the critical value of 0.89. In this procedure, SEM-PLS is used to analyze the data and is based on Smart PLS version 4. The first step is to apply regression analysis to the regression model evaluating construct validity and consistency . Both provide structural analysis that highlights the relationship between endogenous (dependent) and exogenous (independent) variables. (Hair, Hollingsworth, Randolph, & Chong, 2017).

2. Data Collection Instruments

The questionnaire instrument resulting from this research is divided into two parts , namely the first part of the researcher's questionnaire asks respondents to fill in information demographic. Furthermore, the second part of the questionnaire contains 42 statements of the 4 variables that researchers took, namely the use of e-learning (11 items) from the research *D el one and McL ean* (2003), interpersonal communication (8 items) from Suranto's research (2016), learning motivation (15 items) from Uno's research (2011), and student engagement (8 items) from research Handelsman, Bringgs, Sullivan, And Towler (2005). These statements are designed to measure variables that are relevant to research, such as the use of *E-learning* , interpersonal communication, motivation to learn, and student involvement. Each statement is measured using answers ranging from strongly agree and agree, unsure, disagree, and strongly disagree. Whole This instrument is designed to provide institutional support and facilitate adoption from study This with obtain data Which required from respondents. With integrate questionnaire And statements the, expected instrument This capable give understanding Which comprehensive to el variables study and supportive analysis And interpretation results study effectively.

RESULTS AND DISCUSSION

3.1 Research result

3.1.1 Description of Research Data

Table 1. Demographics

Variable	Demographics	Frequency	Percentage	Mean
Type Sex	Man (1)	64	32.0	
	Female (2) Total	136	68.0	1.68
		200	100.0	
Age	<18 (1)	56	28.0	
	>18 (2)	144	72.0	1.72
	Total	200	100.0	
Origin University	In Jambi (1)	88	44.0	
	Outside Jambi (2)	112	56.0	1.56
	Total	200	100.00	

Table 1 displays descriptive statistics. Based on the data, we can conclude that students are classified as <18 (56/28.0%) or >18 (144/72.0%). Data is also divided by student type (64/32.0%) and employee (136/68.0%), followed by university type (88/44.0%) and university type outside Java (112/56.0%).

3.1.2 Data Analysis

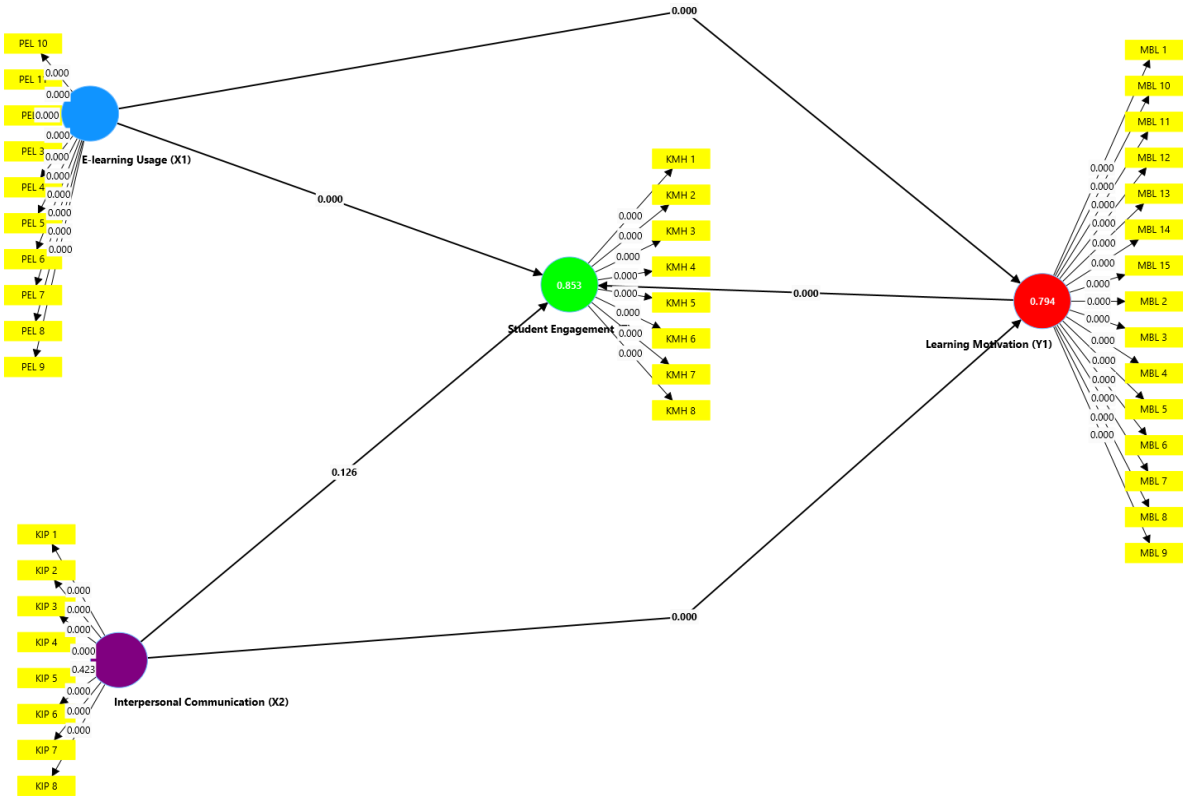
PLS-SEM was used in this research to develop a model that describes the relationship between variables, especially because it has high predictive accuracy. Additionally, it is used for data analysis and hypothesis testing using the Soft Smart PLS approach. (Hair and others, 2017). To ensure optimal study design in Smart PLS, valid instruments must be used so that the instrument can determine what should be adjusted (Hair, Matthews, Matthews, & Sarstedt, 2017). The validation process in this study uses the convergence and discrimination method with reference to Smart PLS 4. The first step is to import the data into an Excel workbook with comma delimited columns (CSV). Once the data is imported, further data analysis steps can be carried out.

Table 2. Description of Questionnaire Statistics, loading factors, VIF, AVE and Cronbach's (Joe F. Hair, Howard, & Nitzl, 2020)

Construck	Statement	Mean	Loading	VIF	Ave	Composite reliability	Cronbach's
Use E-learning	• PEL 1	1,890	0.833	2,917			
	• PEL 2	1,985	0.840	3,549			
	• PEL 3	2,020	0.841	3,058			
	• PEL 4	2,015	0.811	2,682			
	• PEL 5	1,955	0.803	3,123			
	• PEL 6	1,910	0.830	3,540			
	• PEL 7	1,920	0.780	2,743			
	• PEL 8	2,035	0.856	3,703	0.679	0.952	0.934
	• PEL 9	1,990	0.858	3,449			
	• PEL 10	1,965	0.784	2,457			
	• PEL 11	2,015	0.825	3,296			
Communication Interpersonal	• KIP 1	1,855	0.083	2,245			
	• KIP 2	1,830	0.887	4,053			
	• KIP 3	1,870	0.874	3,728			
	• KIP 4	1,930	0.790	2,210			
	• KIP 6	2,020	0.799	2,154			

	• KIP 7	1,945	0.844	2,775	0.606	0.926	0.874
	• KIP 8	2,070	0.822	2,481			
Motivation	• MBL 1	1,870	0.750	2,329			
Study	• MBL 2	1,935	0.874	4,013			
	• MBL 3	2,035	0.857	4,546			
	• MBL 4	1,895	0.847	4,943			
	• MBL 5	2,270	0.635	2,309			
	• MBL 6	1,915	0.816	3,680			
	• MBL 7	1,845	0.665	2,110	0.607	0.958	0.923
	• MBL 8	1,900	0.812	3,116			
	• MBL 9	1,855	0.759	2,707			
	• MBL 12	1,825	0.819	3,943			
	• MBL 13	2,120	0.854	4,472			
	• MBL 14	1,975	0.781	2,607			
	• MBL 15	2,030	0.844	4,225			
Involvement	• KMH 1	1,840	0.859	3,142			
Student	• KMH 2	1,925	0.807	2,788			
	• KMH 3	1,965	0.828	3,214			
	• KMH 4	1,990	0.843	2,927			
	• KMH 5	1,995	0.837	2,916	0.695	0.938	0.913
	• KMH 6	2,050	0.808	2,476			
	• KMH 7	1,940	0.846	2,961			
	• KMH 8	1,915	0.842	2,983			

From the table above it can be seen that based on the average score, the learning motivation variable has the highest value (2,270), followed by other variables which are still at learning motivation variable (mean 2.120), and the lowest was also the learning motivation variable (mean 1,825).



3.1.3 Evaluation of the *Confirmatory Composite Analysis* (CCA) Measurement Model

Step 1: After standardization, the loading must be a minimum of 0.708 and the t-statistic at least ±1.96 to be considered important for the analysis of two samples with a significance level of 5%, (Hair, Ringle, & Sarstedt, 20111). T-statistics in PLS are achieved using the bootstrapped method. As a backup, Wood (2005) suggests using PLS-SEM in conjunction with confidence intervals. Confidence intervals for load indicators can be applied that are similar to t-statistics, and these statistical intervals do not change significantly over time.

Profit from intervals trust is that can used For identify practically significant load indicators when using the method others, such as the dichotomous approach of significance testing (Cohen, 1994). With using SmartPLS 4, we obtain data to show the load of each component . Table 2 and Figure 1 thoroughly illustrate the loadings of the 42 items. Communication interpersonal (KIP 1; 0.083) own mark Lowest, whereas on communication interpersonal Also own mark highest (KIP 2; 0.887).

Step 2: The assessment value of individual indicators results in the amount of variation between the related structure and the individual indicators. This indicator is customizable.

Step 3: There are two methods available to determine construction quality: Cronbach alpha (α) and Composite Reliability (CR). If the correlation coefficient obtains 0.95 or exceeds, each individual component will be excluded from the joint hypothesis due to this redundancy. In particular, redundancy indicates that the indicator does not capture complexity necessary to ensure multi-item construct validity. (Hair, Risher, et al., 2019). So, the indicator seems to be declining. Table 2 about Cronbach alpha and composite reliability indicates below 0.95 and all variables have valid values. The Cronbach alpha value in this study for each variable is listed on the table 2 above.

Step 4: Convergence validity can be weakened by using (AVE). AVE is calculated by comparing the current average of construction reliability indicators. This indicator reduces the average variation between individual constructs and indicators. The AVE criterion is a value that consistently reaches 0.5 (50%) or higher. AVE must be at a minimum of 0.5. A value of 0.5 or higher indicates that the variable is able to explain 50% or more of the itemization variable. (Hair and others, 2017). The PLS-SEM procedure produces an AVE value less than or equal to 0.500 (see Table 2). The variable "Interpersonal Communication" displays the value of the AVE field, which is 0.60. On the other hand, "Student Engagement" has an AVE of around 0.695. For this reason, AVE values deny the existence of any convergence validity.

Step 5: Discriminant validity examines several unique aspects of the construct. Researchers can utilize threshold values such as 0.85 and 0.90 to analyze their own HTMT results. Moreover, Franke and Sarstedt (2019) first cautioned against the use of statistical significance in HTMT and validity interval estimation. All HTMT values in Table 4 are below 0.90, indicating significant differences.

Table 3. Fornell-Larscher Criterion

	Use of E-learning	Communication Interpersonal Lecturer	Motivation Study	Involvement Student
Use of E-learning Communication Interpersonal Lecturer	0.886			
Motivation Study	0.887	0.834		
Involvement Student	0.775	0.851	0.868	

Fornell-Larcker criterion and discriminative validity criterion. In Table 4, the off-diagonal AVE values indicate the relationship between each variable, while the diagonal AVE values show the average value, which shows that the AVE value for this variable is quite high when compared to other variables. Due to this, it can be seen that AVE is more than just the connection seen below. If the AVE coefficient for each variable is less than the correlation coefficient between the variables, it can be said that the discriminative validity is good and easy to use. (Hair et al., 2011). The accuracy of discriminative validity in this study was confirmed applying the Heterotrait-Monotrait (HTMT) technique, as shown in Table 4.

Table 4 Heterotrait-Monotrait Ratio (HTMT)

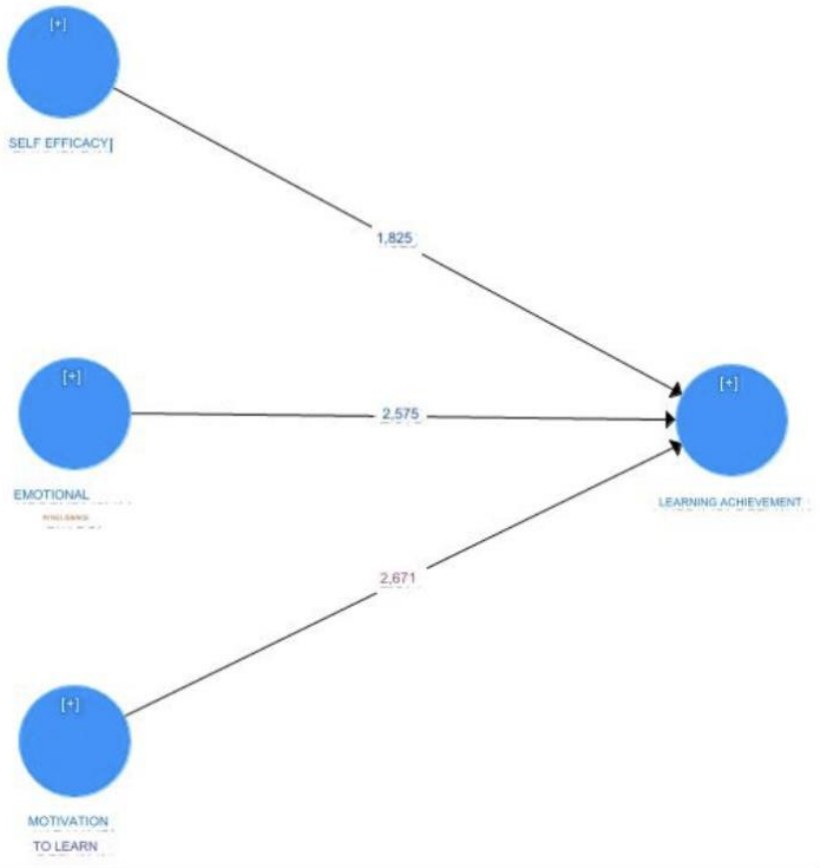
	Use of E-learning	Communication Interpersonal Lecturer	Motivation Study	Involvement Student
Use of E- learning Communication Interpersonal Lecturer	0.886			
Motivation Study	0.887	0.834		
Involvement Student	0.775	0.851	0.868	

The authors confirmed that cross-loadings and the Fornell-Larcker criterion were quite responsive when determining discriminant validity. It is recommended to use HTMT as a surrogate method to determine discriminant validity. This method uses multi-trait and multi-method matrices as the basis for regression analysis. To ensure discriminant validity between two representative variables, HTMT should be around 0.9% (Henseler et al., 2015). According to the data in the table above, all HTMT values are in the range of 0.9, which indicates that the research instruments used are original.

3.1.4. Structural Model Evaluation *or Structural Model Assessment*

Step 1: The significant impact of the regression analysis of the original data set is due to concepts and characteristics that were not taken into account when evaluating the results of the structural model. Thus, the first step is to evaluate the structural model construction to ascertain whether multilinearity is sufficient to solve the problem. The structural model

described by multilinear algebra is able to influence the beta coefficient of determination by increasing, reducing, or splitting the same coefficient of determination. As an indicator in formative construction, VIF can be destroyed. If the threshold is below 3.0, then multilinearity is unlikely to be an issue. An alternative approach is bivariate correlation analysis among constructor values. If the correlation coefficient between two variables is greater than 0.50, the coefficient is able to influence the length and/or sign of the correlation coefficient. When multilinear practices become problematic, the recommended solution is to develop more flexible constructions by incorporating more elastic structures.



Step 2: If multilinearity is not a problem, the next step is to determine the magnitude and significance of the path coefficients. This process can allow researchers to examine the links between the above-mentioned constructs. The deviation coefficient is a predefined number that can range from +1 to -1/1, but usually falls between +1 and -1/1. This is especially true for complex models with several independent frameworks in the structural model. When comparing the absolute value of 1 with the path coefficient value of 0, the greater the capacity to determine endogenous constructs. Likewise, when comparing the values required to be determined, the greater the capacity to determine the dependent construct. Based on the graph mentioned above, a hypothesis model is presented which explains the partial variance of each research variable, (Table 5).

Table 5. Summary of Hypothesis Testing Results

Hypothesis	Coefficient Track	P value	
H1: is there is influence use e-learning to motivation Study student.	0,000	0,000	Supported
H2: is there is influence use e-learning to student involvement.	0,000	0,000	Supported
H3: is there is Influence communication interpersonal lecturer to motivation Study student.	0,000	0,000	Supported
H4: is there is influence communication interpersonal lecturer towards involvement student.	0.126	0,000	Supported
H5: is there is influence motivation Study student to involvement student.	0,000	0,000	Supported

Step 3: Similar to the multiple regression model, the statistic that is often used to determine structural model predictions is R2. Known as the determining factor, it is the average sum of all endogenous constructs. This means that predictions are only accurate if they match the sample size and are used to estimate outcomes; R2 cannot be applied to the entire population (Rigdon, 2012). The minimum value of R2 is zero, but usually approaches such high values. According to Multiple regression, there are more independent variables (constructs) in the structural model, which results in a higher R2 value. It is thought that this independent variable is related to the dependent variable. The maximum R2 is 1, but there are some very small fluctuations occurring. When evaluating the R2 value of a structural model, researchers should adapt their analysis to conduct relevant empirical research and use the resulting data as a guide. Lastly, some discipline knowledge Also use adjustment R2, Which use approach systematic to adjust R2 to a lower bound based on sample size and number of predicted constructs. According to multiple regression, R2 is determined when researchers realize that some of the predictor variables in the structural model are not significant. (Hair and others, 2017). In this study, the regression with the coefficient indicating that specified (R2) is presented in Table 6 below. Data in Table 6 shows that learning achievement has a moderate, temporary determination test Academic burnout has a weak test of determination. Thus, based on results measurement in study This, variable motivation Study own level moderate power in explaining variability, while engagement variables students have level strength Which strong in explain its variability.

Table 6. R Square.

	R Square	R Square Adjusted
Learning Motivation	0.795	0.856
Students Engagement	0.856	0.854

Step 4: A second predictor of structural model accuracy is effect size, which provides guidance for each independent model construct. To do this, each predictor construct is

obtained from the model systematically (SmartPLS does this automatically), and the R2 value is calculated without using the previously mentioned predictors. Finally, R2 with model predictors is measured by R2 without model predictors, and the variation between the two R2 values indicates whether the predictions consistently meet the target of the dependent variable. Hair and Association (2017). Effect curves, also known as f2, are categorized as small, medium, and large. In terms of 0.02 and 0.15, these figures indicate small-scale impurities; 0.15 and up to 0.35 indicate large-scale impurities; 0.35 and above indicates significant impurity. Effect size is also used as a predictive indicator in the effect size is also used as a predictive metric in the sample set f2.

Based on Size Effect (F2) from Table 7, results analysis show that user E-learning own size effect small on results Study, communication Interpersonal has a moderate effect on learning outcomes, with an f2 value of around 0.280. Meanwhile, student involvement has an equally large effect on learning motivation shows a large effect with an f2 value of 0.391. The conclusion is in context In this research, student motivation to learn and student engagement have an impact more big on results Study from on use e-learning And communication interpersonal.

Table 7. Effect Size (F2)

	E-learning Usage	Interpersonal Communications	Learning Motivation	Students Engagement
E-learning Usage			0.202	0.280
Interpersonal Communications			0.391	0.285
Learning Motivation				
Students Engagement				

Step 5: Next to estimate the indicator is the Q2 value, which is also known as blindfolding, (Geisser 1974). When comparing Q2 with zero, the former indicates a larger number and higher accuracy, while the latter indicates a higher prediction accuracy. In addition, Q2 values closer to 0.25 or 0.50 indicate a more accurate and better prediction. larger than the PLS-SEM model. Q-square, also known as redundant cross-validation (Q2), is used to determine the significance of a predictive model. If Q2 is higher than zero, this illustrates that the model has predictive power that can be applied to the relevant variables. On the other hand, if Q2 < 0, this indicates that the model does not have significant predictive value. In 2017, he held a meeting with Sartre et al. In this study, the experimental design using redundancy cross validation (Q2) is presented in Table 8.

Table 8. Q^2 Square

	RMSE	MAE	Q^2_predict
Learning Motivation	0.482	0.329	0.779
Students Engagement	0.447	0.323	0.809

3.2 DISCUSSION

Study This own objective main Which in arrange in a way detailed in identify And evaluate various factor Which role in influence student involvement at several universities in Sumatra. The research sample consisted of from 200 student respondents at several universities in Sumatra who were selected specifically. In this research, the researcher describes in detail some of the influences of each variable Which in thorough, ie use e-learning (X1), communication interpersonal (X2), student involvement (Z) and learning motivation (Y1). There are five proposed hypotensions For answer question study And the result Then showing that all over hypotension the own influence Which very significant. Researcher explain in a way details regarding each hypotension relevant to the research question, discuss connection between variables Which has mentioned And test How strength that relationship. Below is a summary covering the ten hypotensives tested in this research.

D-1: The use of e-learning (X1) has an impact on student learning motivation (Y1). This fact is confirmed by Manurung (2017), who shows that the use of e-learning has a very significant influence on student learning motivation. Similar findings were also presented in Syaifuddin's (2023) research, which revealed that effective use of e-learning can increase student learning motivation. Research conducted by Novalinda (2018) also concluded that there was a positive correlation between the use of e-learning and student learning motivation. This emphasizes the importance of e-learning in increasing student learning motivation.

H-2: The effect of using e-learning (X1) affects student engagement (Z). E- learning refer on use technology information And communication For support process learning, like platforms online, videos learning, forum discussion on line. Student engagement refers to the level of student participation, involvement and activity in the learning process. The findings of the studies mentioned support this hypotension by showing that the use of e-learning has a significant influence on student involvement in the learning process. Sunarti Research (2018), Novendri (2021), and Simbolon & Setyawan (2018) found that there is significant relationship between use of e-learning and student engagement. This shows that the use of e-learning technology can increase student participation and engagement in class, whether through interaction with course materials, peer collaboration, or direct interaction with teachers through virtual learning environments. With thereby, importance utilization technology e-learning in increase involvement student in process learn how to teach, Which can impact positive on results learning they.

H-3: The influence of lecturer interpersonal communication (X2) on student learning motivation (Y1) based on the findings shows that there is a very strong influence significant between these two variables. Lecturer interpersonal communication refers to the interaction between the lecturer and the lecturer student in context learning, including communication verbal, non-verbal, as well as availability of lecturers to provide support and guidance to students. Motivation Student learning is an internal drive that encourages students to learn, incl interests, ambitions and goals in the learning process. This is related to research conducted by Pratiwi (2018), which found that interpersonal communication has a significant impact on students' motivation to learn during the learning process. Additional research conducted by Suryana (2021) also shows a significant relationship between communication interpersonal lecturer And motivation Study student. So Also in study latest Which done by Widjaja & Kusumo (2022), they found that communication interpersonal lecturer plays an important role in increase level motivation Study student through involvement active they in learning in the classroom.

H-4: Influence of interpersonal communication (X2) and student involvement (Z) based on results study showed significant differences between the effects of person-to-person communication on students' motivation to learn. Interpersonal communication in this context affects a person's ability to interact, communicate, and create effective relationships with other people in the learning environment. Involvement student refer on the level of student participation and activity in the teaching and learning process. All of this is related to research conducted by Pratiwi (2018), which found that interpersonal communication has significant weaknesses on students' learning motivation the context of their involvement in the learning process. Another study conducted by Suryana (2021) also shows that there is a significant relationship between interpersonal communication and student learning motivation. Likewise in the latest research conducted by Wijaya & Susanto (2023), they found that interpersonal communication plays an important role in increase student learning motivation through their active involvement in learning in the classroom.

D-5: Influence motivation Study student (Y1) based on results study show exists influence significant between motivation Study student to involvement student (Z). This is related to research conducted by Rahayu (2019), which found that student motivation to learn has a significant impact on student engagement in the learning process. Additional research conducted by Widodo (2020) also shows a significant relationship between student motivation to learn and student engagement. So also in study latest which is conducted by Santoso & Utami (2023), they found that student learning motivation played a role important in increase level participation student in learning in class. Findings This confirm importance development motivation Study student For increase student involvement in the process Study- teach.

CONCLUSION

This research aims to see how the factors that influence each variables in study This in various university in Sumatra. In study the, there is five hypothesis Which submitted, that is influence use e-learning (X1), interpersonal communication (X2), And motivation Study (Y1) to involvement student (Y2). Results study show that use e-learning own influence Which significant on student learning motivation, good use of e-learning can improve motivation Study student use technology e-learning can increase level participation And involvement student in learning. With thereby, importance use of e-learning technology to increase student involvement in the process learn how to teach, Which can impact positive on results their learning. Furthermore, the influence of communication also has a significant influence on motivation Study. Lecturer interpersonal communication plays an important role in increasing motivation levels student learning through their active involvement in classroom learning. Besides that, communication interpersonal Also found own influence Which significant to student involvement. Interpersonal communication in this context refers to ability individuals to interact, communicate, and build relationships which is effective with person other in environment learning. Involvement student refer on level participation and activities internal students process learn how to teach.

Furthermore, student learning motivation also has an influence on engagement Interpersonal communication students in this context refer to individual abilities to interact, communicate, and build effective relationships with others in a learning environment. Thus, the results of this study indicate that, The use of e-learning and lecturer interpersonal communication has a significant impact on learning motivation and student engagement at several universities in Sumatra. Besides That, motivation Study Also in a way direct contribute on involvement student. By therefore, effective implementation of e-learning and

good interpersonal communication between lecturers and students can increase learning motivation and student involvement in process learning.

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