

Students' Academic Performance by Using E-Learning as a Method of Teaching and Learning

Mohd Faizul Hassan^{1*}, Naffisah Mohd Hassan²

¹Faculty of Business and Management, Universiti Teknologi MARA,
Cawangan Selangor, Kampus Puncak Alam, Malaysia
*faizulhassan@uitm.edu.my

²Faculty of Business and Management, Universiti Teknologi MARA, Cawangan
Selangor, Kampus Puncak Alam, Malaysia naffi885@uitm.edu.my
*Corresponding Author

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Abstract: *E-learning is being implemented in higher educational institutions as a method of teaching and learning. Several studies have been carried out on academic performance, particularly on a group of conventional students. However, only a few have been written on E-learning among PJJ students' academic performance in E-learning technology. This study was conducted to determine and investigate the relationship between Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) towards Attitude (ATT) and Actual Use (AU) as a factor of Students' Academic Performance towards e-learning technology among students of the business management faculty enrolled in BA232 Bachelor in Office Systems Management (Hons) at UiTM Puncak Alam. This study took a quantitative and stratified sampling approach with 155 respondents. Statistical methods analyses used were multiple regression and logistic regression. Actual Use (AU), Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude (ATT), and Actual Use (AU) are significant as the p-values are smaller than = 0.05. E-learning use had a significant influence on students' academic performance. Thus, the more the students use E-learning, the better their academic performance. This study would benefit online institutions, online / distance instructors, decision-makers at all higher education levels, and online students. The*

implications for practices, barriers to e-learning, ongoing support by the government, limitations of the study and recommendations for research were discussed.

Keywords: *Actual Use (AU), Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude (ATT) and Actual Use (AU)*

INTRODUCTION

Electronic learning (E-learning) has become an alternative method of learning. Further, it has become more prevalent in higher educational institutions due to the growth and evolution of Internet technologies. The concept of E-learning is based on using information and communication technology (ICT) such as the internet, mobile phones, and computers to enhance and facilitate the teaching and learning process. Apart from that, E-learning also enables humans to share all kinds of materials, such as slideshows, Word documents, PDFs, and live online classes and forums. It is noted that e-learning is a unifying term used to describe the fields of online learning, web-based training, and technology-delivered instructions (N. D. Oye et al., 2012). E-learning has been implemented in many universities and thus far has impacted students' performance as a method of learning besides using traditional face-to-face methods. E-learning is becoming increasingly accepted around the world these days, as it uses technology and social media to offer education (Aljawarneh, 2020; Hong et al., 2017). E-learning models began as mere replications of classroom instruction but have evolved to those that integrate technology and pedagogy.

Early models, such as the Demand-Driven model (MacDonald, et al, 2001) focused on the role of technology in providing content, access, and electronic services. Soon after, information and technology's rapid development and commercialization impacted E-learning implementation and beyond. Moreover, E-learning implementation in higher educational institutions has granted greater access or autonomy, allowing students to learn at any given time and place. In Malaysia's higher educational institutions, the growth of E-learning has developed over the past few years as it offers many advantages and benefits for improving students' performance. In this regard, many studies have

been conducted to identify the key factors contributing to the student's performance, except for the relationship between E-learning and students' academic performance. Hence, this study is imperative to be carried out to examine the relationship between E-learning and the student's academic performance at UiTM.

It is observed that, currently, the rapid growth of ICT has affected all sectors in Malaysia, including education. The education sector has evolved from a single learning method, i.e., face-to-face, to various methods, such as E-learning. Be that as it may, there is still much to discover about E-learning, especially blended learning in institutions and teachers' education establishments. E-learning as a modern strategy for teaching and learning is multi-dimensional and dynamic, changing according to context, circumstances, and interests.

E-learning is being implemented in higher educational institutions as a method of teaching and learning. Several studies have been carried out on academic performance, particularly on a group of conventional students, but only a few on e-learning among PJJ students in UiTM. Limited studies have been done on the factors influencing students' academic performance in E-learning technology. This statement follows the finding that shows the significant relationship as stated (Kunhi Mohamed, 2012). Further, this statement is also similar to that of Rodgers (2008) where online interaction has a positive and statistically significant impact on the student's academic performance. Thus, this study will focus on factors influencing the E-learning system and the acceptance of technology by students' academic performance. This research will also only focus on e-PJJ students, where the findings can help improve E-learning in UiTM, especially that of e-PJJ students. Therefore, this study and its findings are crucial and beneficial in the long run, where E-learning is seen to be comparatively better and more cost-effective than the traditional method of learning (face-to-face). The paper is organized into different sections. Section 2 reviews the literature of past related studies and develops the hypotheses. Section 3 explains the research methodology. Section 4 presents the analysis and the research findings and discusses the implications. Finally, Section 5 provides the conclusions and recommendations for future research.

2. LITERATURE REVIEW

This section reviews the related literature on e-learning and discusses past studies for hypothesis development. In recent years, ICT has dramatically influenced the transmission of knowledge. This has also influenced the present methods of teaching and learning. Computers and digital technologies have enhanced the competence of contemporary teaching and learning methods. An educational transition has occurred towards e-learning, facilitating the utilization of information and communications technology and integrating the Internet into the realm of teaching and learning.

Furthermore, E-learning enriches learning by presenting an alternative approach to delivering adaptable and user-friendly education. The learning environment has evolved from the traditional face- to-face classroom to online. Numerous institutions of Higher Education (HEIs) have embraced e- learning for online courses or to complement in-person sessions (within a blended learning framework). From another perspective, e-learning is an advancement of technology in learning, as well as the electronic delivery of training. It is worth noting that E-learning has become similar to the flexible education method, which can be conducted anytime, anywhere, and by anyone.

Generally, there are many definitions of E-learning from the previous study as (Clark & Mayer, 2016) where it is stated that “Definition of E-learning” is a method where instruction is delivered by a digital device such as a computer or mobile that supports learning”.

A Cumulative Grade Point (CGPA) refers to the student’s average grade for all semesters, whilst the Grade Point (GPA) may refer to only the current semester or term. Based on this finding, the researcher may forecast the expected relationship between E-learning and students’ academic performance. Madar & Ibrahim (2011) finds that there is a very strong relationship between students’ GPA and their participation in the discussion forum where $r = 0.821$ has concluded that the more the students use E-Learning, the better their academic performance.

On the other hand, recent studies suggest that students experience stress due to online learning and prefer in-person instruction (Chakraborty et al., 2021;

Fawaz & Samaha, 2021). As a result, students' academic achievements have decreased, causing their academic performance to deteriorate. Perceived Usefulness is a crucial driver of usage behaviour and intention. Perceived Usefulness refers to "the degree to which a person believes that using a particular system would enhance his or her performance" (Davis, 1989) as E-learning allows the flexibility of learning at any time and place. N. D. Oye, Iahad, et al., (2012) indicate that the perceived use of E-learning significantly affects the attitude towards using E-learning.

In the e-learning context, prior research demonstrates a significant effect of perceived usefulness towards use. The finding is also supported by Al-Adwan et al., (2013), who indicated that perceived usefulness (PU) has significantly influenced Actual Use (AU) ($p < 0.05$). (Johari et al., 2015) It has also been indicated in previous studies that PU has significantly influenced the intention to use (ITU) ($P < 0.05$). On top of that, perceived usefulness has a significant relationship with attitude, which aligns with the findings (Abdullah & Toycan, 2017; Fathema et al., 2015) On this basis, the researchers propose the following hypothesis 2: Perceived Usefulness (PU) has a significant effect on Attitude (ATT) and hypothesis 4. Perceived Usefulness (PU) significantly affects Actual Use (AU). Perceived Ease of Use is the degree to which a person believes that using a particular system would be free from effort (Davis, 1989). A research by Ho Cheong & Park, (2005) have found that Perceived Ease of Use influenced students' intention to use internet-based learning indirectly through Perceived Usefulness and Perceived Enjoyment (Gong et al., 2004) Also, it has been found that Perceived Ease of Use has a significant effect on students' attitudes and Perceived Usefulness simultaneously. Perceived Ease of Use's effect on Perceived Usefulness is postulated by the Technology Acceptance Model (TAM). This finding can be supported by Adewole-Odesi, (2014) where it is stated that there is a significant relationship between Perceived Ease of Use and students' attitudes towards E-learning. From another perspective, Perceived Ease of Use (PEOU) has a significant influence on attitude towards Use (ATU) ($P < 0.01$). Based on another study conducted by Kumar & Johari (2015) it has been indicated that PEOU significantly influences the attitude of students (ATU) and this aligns with a study conducted by Gill et al., (2020). On this basis, the researcher proposes the following hypothesis 1, Perceived Ease of Use (PEOU) has a significant effect on the Attitude (ATT) and hypothesis 3, Perceived Ease of Use (PEOU) has a significant

effect on the Actual Use (AU). In this study, the researcher investigated the relationship between attitude (ATT) and actual Use (AU), as a previous study by Adewole-Odesi, (2014) has indicated that there is a significant relationship between attitude and the Actual Use of the E-learning system. On this basis, the researcher proposes the following hypothesis: 6 Attitude (ATT) has a significant effect on Student Academic Performance (SAP). A study conducted by N. D. Oye, Adam, et al., (2012) indicates that Actual Use (ITU) significantly affects students' academic performance ($\beta = .749$; $p = 0.001$), where it can be concluded that Actual E-learning use significantly influences students' academic performance. Thus, the more the students use E-learning, the better their academic performance. On this basis, the researcher proposes the following hypothesis 5: Actual Use (AU) has a significant effect on the Attitude (ATT), and hypothesis 7: Actual Use (AU) has a significant effect on the Student Academic Performance (SAP).

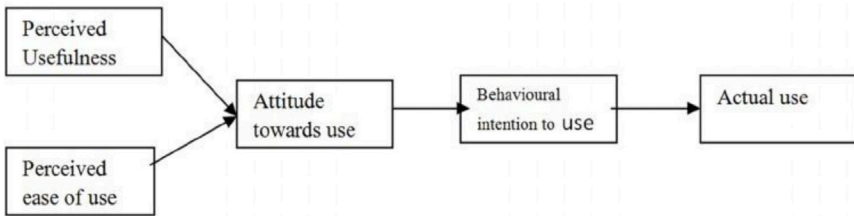
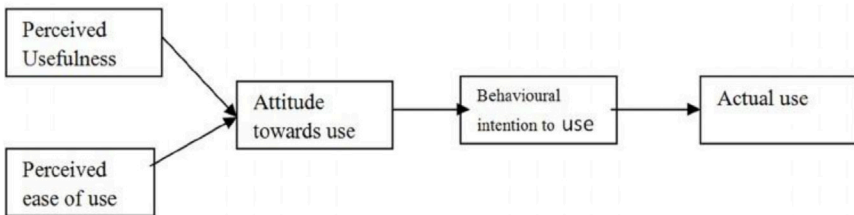


Fig. 1 The original technology acceptance model TAM (Davis, 1989)



The theoretical framework for this study is adopted from the Technology Acceptance Model TAM, of which is one of the well-known models related to technology acceptance proposed by Davis in 1986. The Technology Acceptance Model (TAM), in relation to the model as reflected below, influences external factors towards the attitude, belief and intention to use. TAM posited two cognitive beliefs namely perceived usefulness and

perceived ease of use. The findings by the TAM model indicate that the actual use of a technology system has been influenced directly or indirectly by the user's behavioural intentions, attitude, perceived usefulness of the system and the perceived ease itself of the system.

Hence, TAM also proposes that the external factors affect the factor of intention and actual use through the mediated effects on perceived usefulness and perceived ease of use. The above conceptual framework is used in this study.

Table 1. Summary of Researcher Hypothesis

H ₁	Perceived Ease of Use (PEOU) has a significant effect on Attitude (ATT)
H ₂	Perceived Usefulness (PU) has a significant effect on Attitude (ATT)
H ₃	Perceived Ease of Use (PEOU) has a significant effect on Actual Use (AU)
H ₄	Perceived Usefulness (PU) has a significant effect on Actual Use (AU)
H ₅	Actual Use (AU) has a significant effect on the Attitude (ATT)
H ₆	Attitude (ATT) has a significant effect on Student Academic Performance (SAP)
H ₇	Actual Use (AU) has a significant effect on Student Academic Performance (SAP)

3. RESEARCH METHODOLOGY

Instrument Development - The instrument was developed by first reviewing the literature. We adopted existing construct items from past studies to ensure the best possible item reliability and validity. The items and their sources are in Appendix 1. All items were measured on a 5-point Likert scale (1 = 'strongly disagree' to 5 = 'strongly agree'). The respondents were also asked to provide their demographic profiles of gender, age, and working experience, service sector. The other variables were technology factors and academic performance.

Before the data was collected, the instrument and the items were validated and pre-tested. A pre- test is a procedure that will require responses and feedback from a small set of respondents from the population. For face validity, the constructs and the items were checked and examined by three faculty members who were experts in the field. The procedure was performed as a strategy to ensure each item represents the meaning of the construct, to indicate that the research content was related to the dimensions and variables, and to ensure no bias in this research was presented. A pilot test was also conducted to assess the quality of the instrument, the degree

of understanding of the statement, and the measure of the item's internal consistency score. Thirty undergraduate students participated in the pilot test. Ursachi et al., (2015) Mentioned a general acceptance rule: Cronbach alpha of 0.6 – 0.7 indicates an acceptable level of reliability, and 0.8 or greater indicates an excellent level. The results of the internal consistency score show that all scores are within the acceptable values.

3.1 DATA COLLECTION: SAMPLE AND PROCEDURES

The research design for this research was correlational research. According to Salkind (2009), correlational research is a method used to determine the relationship between two or more variables. This type of research design was chosen because it will indicate the relationship, if any; - the results also allow the researchers to examine the interrelationships among variables and draw explanatory inferences. Questionnaires were chosen for this study to collect data due to the ease of using them as well as their excellent acceptability, fast response obtainability and core consistency. and ease of conduct (Bourdon et al., 2005). Moreover, the questionnaires enhance the consistency and reliability of the results as they allow standardized quantitative data to be collected (Malhotra, 2006). The study was carried out on E-PJJ undergraduate students, and the sampling frame of this study was obtained from the Faculty of Business Studies, UiTM Puncak Alam. In determining the sample size, various strategies could be adopted. One of them is to use the sample- to-item ratio (Gorsuch, 1983). Using this method, the recommended sample size would be 155. To collect the data, an online survey was designed using Google Forms, and invitations to participate in the study were sent through emails and WhatsApp applications. A total of 155 responses were received, meeting the minimum number of a required sample size of 155 participants.

RESULT

This chapter presents the data analysis techniques and interpretation of the findings on the impact of e-learning on academic performance. The

finding was intended to answer the study's research objectives. Data was collected during data analysis and interpretation of findings, reports were produced in tables and figures, and qualitative analysis was done. Section 4.2 will discuss the reliability of the measurement scale obtained from the actual study. Meanwhile, Section 4.4 discusses the descriptive data analysis, which includes the respondents' background using bar charts, frequency tables, mean, and standard deviation. Section 4.6 explains the results from the logistic regression model.

4.1 DATA COLLECTION: SAMPLE

After the data was collected from the actual study, the reliability values for the measurement scales used to measure the students' participation and technology factors among e-PJJ students of Bachelor of Office Management were obtained. Based on table 4.1, the Cronbach's alpha technology factors for each item were 0.955, 0.940, 0.907 and 0.941 respectively. This indicates that both scales are highly reliable for this study. The result of the reliability test is summarized in table 1.

Table 2. Cronbach's Alpha Result for Actual Study

Scale	Cronbach's Alpha
Perceived Ease of Use (PEOU)	0.955
Perceived Usefulness (PU)	0.940
Attitude towards Using (ATT)	0.907
Actual Use (AU)	0.941

In conducting the research at hand, the researcher performed several analyses on the values of a Measure of Sampling Adequacy (MSA), the Kaiser-Meyer-Olkin, as well as Bartlett's test of Sphericity. In this particular instance, the value of the MSA was agreed upon at 0.5, as the appropriate value for the overall KMO must fall above 0.6. Meanwhile, Bartlett's Sphericity test is conducted to unravel whether a significant correlation might be projected between the proposed variables. According to (Gliner et al., 2011) initial communalities characterize the relation between the variable and all other variables, that is, the squared multiple correlation between the item and all other

items before rotation. If most commonalities are low $<.30$, a small sample size is more likely to distort results (Gliner et al., 2011). The researcher adopted the use of factor analysis to analyze the independent dependents on discarding any items from the instruments that resulted in high cross-loading. Factor analysis was

conducted on the independent variable. The list of tables below illustrates the factor loading for the rotated factors.

Table 3. Factor Analysis Result

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.947
Bartlett's Test of Sphericity	Approx. Chi-Square	3191.597
	df	105
	Sig.	<u>.000</u>

4.2 DESCRIPTIVE ANALYSIS

For this study, five demographic variables, which include gender, age, level of education, working position, working experience, and service sector, were determined. The frequency distribution of Office Management PJJ students is shown in Table 3 below. The number of female students involved in this study was 114 (74 %), while the number of male students was 41 or 26 %. A majority of the students (61.3 %) are students aged between 21 to 26 years old. The balance is followed by ages 27 to 32 years with 32.9 % (51 students), 33 to 38 years with 5.2% (8 students), and only one student aged 45 years and above. Almost 88.4% of students taking the Degree in Office

Management courses enrolled from the Diploma level. The balance level of education (STPM) are 13 students (8.4%), followed by SPM (3 students) with 1.9%, and two students with 1.3% were from other levels of education. Furthermore, the highest number of positions among the PJJ students was support staff (115 students), with 74.2%. This was followed by 24 students at 15.5% being at executive position. 11 students at 7.1%, and five students (3.2%) respectively, held managerial positions. Moreover, 41.9% (65 students) had less than

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one year of working experience, and 62 students, at 20% had 2 to 5 years of working experience. The balance breakdown for work experience are 6 to 10 years of working experience (24 students at 15.5%), followed by 10 to 15 years of working experience (three students with 1.9%), and only 1 (0.7%) student had 15 years or more of working experience. Meanwhile, most of the respondents were from the government service sector, which was 82 students, with 52.9%. Sixty-four students were from the private service sector at 41.3%, the balance of which is followed by self-employed (seven students at 4.5%), and NGO's service sector (two students at 1.3%).

Table 3. Frequency Distribution of Office Management e-PJJ Students based on the Demographic Profile Cronbach's Alpha Result for Actual Study

Variable	Description of Variable	Frequency	Percentage
Gender	Male	41	26%
	Female	114	74%
Age	21 to 26 years	95	61.3 %
	27 to 32 years	51	32.9 %
	33 to 38 years	8	5.2 %
	45 years and above	1	0.6 %
Education Level	SPM	3	1.9%
	STPM	13	8.4%
	Diploma	137	88.4%
	Master	0	0%
	PhD	0	0%
	Others	2	1.3%
Position	Support Staff	115	74.2%
	Executive	24	15.5%
	Manager	5	3.2%
	Others	11	7.1%
Working Experience	Less than 1 year	65	41.9%
	2 to 5 years	62	40%
	6 to 10 years	24	15.5%
	10 to 15 years	3	1.9%
	15 years and above	1	0.7%
Service Sector	Government	82	52.9%
	Private	64	41.3%
	Self Employee	7	4.5%
	Ngo's	2	1.3%
Total		155	100%

Students were asked to rate the grade point average (GPA) in five ranges: (less than 2.00, 2.01 – 2.50, 2.51 – 3.00, 3.01 – 3.50 and 3.51 – 4.00). The students' academic performances were then categorized into low, pass, moderate, and high. Those who have a GPA less than 2.00 were categorized as low. Those with a GPA between 2.01 and 2.50 were categorized as having a pass GPA. Those with a GPA between 2.51 to 3.00 and 3.01 to 3.50 were considered as having moderate CGPA. While those with a GPA between 3.51 to 4.00 were considered as having a high GPA. Figure 5.1 shows the students' academic performance among e-PJJ students. 83.2 per cent of the e-PJJ students (131 students) had a moderate GPA, followed by 12.3 per cent of students (19) having a high GPA. Then, 4.5 per cent of students (7 students) had a pass for their GPA, and none of the students got a low GPA.

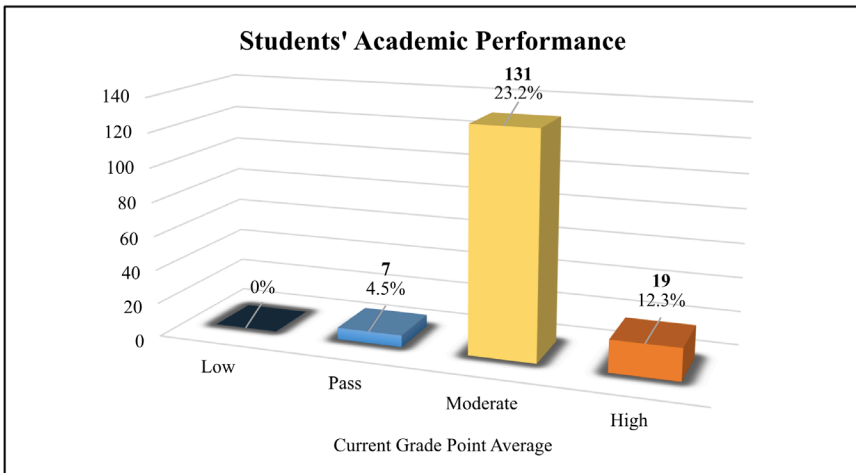


Fig. 2 Distribution of E-PJJ Students Based on Grade Point Average (GPA)

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Table 4.1. Coefficient Table of the H1

		Coefficients			t	Sig.	Collinearity Statistics	
		Unstandardise d Coefficients	Std. Error	Standardised Coefficients Beta			Tolerance	VIF
	(Constant)	-.034	.160		-.215	.830		
1	peou_m	.219	.088	.208	2.489	.014	.161	6.211

a. Dependent Variable: att_m

From the results above, it is indicated by the (p-value = .014) based on coefficients, that PEOU is at 21.9%; as a result, the Perceived Ease of Use (PEOU) significantly affects the Attitude (ATT). In conclusion, this hypothesis is accepted. H1: Perceived Ease of Use (PEOU) significantly affects Attitude (ATT).

Table 4.2. Coefficient Table of the H2

		Coefficients			t	Sig.	Collinearity Statistics	
		Unstandardise d Coefficients	Std. Error	Standardised Coefficients Beta			Tolerance	VIF
	(Constant)	-.034	.160		-.215	.830		
	pu_m	.786	.091	.717	8.593	.000	.161	6.211

a. Dependent Variable: att_m

From the result, it is indicated that the p-value for Perceived Usefulness (PU) and (p-value =.000) are significant as the p-values are smaller than a = 0.05. It can be concluded that hypothesis 2 is accepted. H2: Perceived Usefulness (PU) significantly affects Attitude (ATT).

Table 4.3. Coefficient Table of the H3

		Coefficients			t	Sig.	Collinearity Statistics	
		Unstandardised Coefficients	Std. Error	Standardised Coefficients Beta			Tolerance	VIF
	(Constant)	.106	.148		.717	.474		
1	peou_m	.276	.081	.273	3.395	.001	.161	6.211

a. Dependent Variable: au_m

The result indicated the p-value for perceived Ease of Use (PEOU) and (P-value=0.01). Besides, it is indicated that hypothesis 3 is accepted as the p-values are smaller than a = 0.05, so it can be concluded that hypothesis 3 is accepted. H3: Perceived Ease of Use (PEOU) significantly affects Actual Use (AU).

Table 4.4. Coefficient Table of the H4

	Unstandardised Coefficients		Standardised Coefficients		t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta				Tolerance	VIF
	(Constant)	.106	.148					.717
pu_m	.697	.085	.662		8.239	.000	.161	6.211

a. Dependent Variable: au_m

The result indicated that the p-value of the Perceived Usefulness (PU) and (p-value = 0.000) is significant as the p-values are smaller than $\alpha = 0.05$, so it can be concluded that hypothesis 4 is accepted. H4: Perceived Usefulness (PU) significantly affects Actual Use (AU).

Table 4.5. Coefficient Table of the H5

	Unstandardised Coefficients		Standardised Coefficients		t	Sig.
	B	Std. Error	Beta			
	(Constant)	.286	.161			
au_m	.934	.037	.897		25.053	0.00

a. Dependent Variable: att_m

The result indicated that the p-value of the Actual Use (AU) and (p-value = 0.000) is significant as the p-value is smaller than $\alpha = 0.05$, so it can be concluded that hypothesis 5 is accepted. H5: Actual Use (AU) significantly affects attitude (ATT).

Table 4.6. Classification table of the H6 and H7

Variable	Regression coefficient (B)	Odds ratio (95% CI)	Wald statistic	p-value
ATT	-2.121	0.120 (0.017,0.859)	4.456	0.035
AU	2.163	8.699 (1.155,65.516)	4.409	0.036
Constant	0.813	2.254		

Table 4.6 shows there are two variables, namely Attitude and Actual Use. The p-value indicates that these two variables significantly affect the student's academic performance, where the p-value < 0.005 - as a

conclusion this portrays that the strongest predictor affects the student's GPA, recording an odd ratio of 9.699. This indicates that the students who had no intention of using E-learning are over eight times more than students who have the intention to use e-learning.

This study used binary logistic regression analysis to determine the association between independent variables (ATT and AU) and students' GPA. A few steps are involved to get the final model of students' GPAs. First is the variable selection method. In this method, all variables (ATT and AU) were included in the model, and only variables with a p-value less than 0.05 were selected as the preliminary primary effect model. Then, model's fit was assessed using the Omnibus test of model coefficient, model summary, and Hosmer-Lemeshow test. The last step included the interpretation and presentation of the final model.

Table 4.7. Omnibus test of Model Coefficients

	Chi-Square	df	p-value
Model	5.414	2	0.047

Table 4.7 shows the omnibus test of the model coefficient. The omnibus test indicates whether the logistic regression model performs well. If the significant value is less than 0.05, the model is significant, and at least one predictor is significant in the model. The result shows the chi-square statistics for the model equals to 5.414 with a degree of freedom of two and a p-value (0.067), more significant than α (0.05). Therefore, this indicates that at least one predictor is not significant in the model.

Table 4.8. Model of Summary

-2 Log Likelihood	Cox & Snell r Square	Nagelkerke R Square
177.641	0.034	0.050

Based on Table 4.8, the value of 2 log-likelihood for the logistic model with two predictors (ATT and AU) equals 177.641. Cox & Snell R-square and Nagelkerke R-Square are pseudo-R-Square that indicate the proportion of variation in the response variable explained by the predictor variables. The closer the value to 1, the better the

model. In this study, the value of the Cox & Snell R-Square is 0.034, and Nagelkerke R-Square is equal to 0.05. This indicates that the predictors (ATT and ITU) have explained about 3.4% and 5% of the dependent variable (Student GPA).

Table 4.9. Hosmer and Lemeshow Test

Model	Chi-square	p-value
	4.985	0.173

Table 4.9 shows the result of the Hosmer and Lemeshow test with a chi-square of 4.985 and a p-value of 0.173, which was greater than 0.05. This indicates that there was no significant difference between the observed probability and the expected probability. Thus, the model fits.

Table 4.10. Classification Table

Variable	Regression coefficient (B)	Odds ratio (95% CI)	Wald statistic	p-value
ATT	-2.121	0.120 (0.017,0.859)	4.456	0.035
AU	2.163	8.699 (1.155,65.516)	4.409	0.036
Constant	0.813	2.254		

Classification will indicate how well the model can predict the correct category (less than 3.00/above 3.00) for each case. The model correctly classified 74.2 per cent of cases overall. The sensitivity of the model is the percentage of the group that has a GPA above 3.00 and has been accurately identified by the model (true positives). In this study, we correctly classified 99.1 per cent of students with a GPA above 3.00. The model specification is the percentage of the group without the characteristic of interest where a student who gets a GPA less than 3.00 is correctly identified (true negatives). Based on the table below, the specificity is 9.3 per cent (students with a GPA below 3.00). Additionally, as shown in Table 4.10, there are two variables (ATT and AU) that were significantly affected by the student’s academic performance (p-value<0.05). The strongest predictor that affects the Student’s GPA is an odds ratio of 8.699. This indicated that students who intended to use learning were over eight times more than those who did not intend to use e-learning. The odds ratio of 0.120 for attitude was 0.12 times less likely than having a GPA above 3.00.

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Table 4.11 Summary of Test of Significant

		GPA		
		Less than 3.00	Above 3.00	Percentage Correct
GPA	Less than 3.00	4	39	9.3
	Above 3.00	1	111	99.1
Overall percentage				74.2

Table 4.12. Summary table of model the 1,2,3.]

	Model 1	Model 2	Model 3
Variables Included	DV: ATT IV: PU, PEOU	DV: AU IV: PU, PEOU	DV: ATT IV: AU
Model Summary			
R-Square	0.830	0.842	0.804
ANOVA	p-value (0.000)	p-value (0.000)	p-value (0.000)
Coefficient	PEOU = 0.219 (0.017*) PU = 0.786 (0.000*)	PEOU = 0.276 (0.001*) PU = 0.697 (0.000*)	AU = 0.934 (0.000*)

* Represent the p-value

Based on the table above, for model 1, the researcher includes the variables to test the model to investigate the relationship between Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) towards Attitude. The value of R square for model 1 is 0.83. It reflects that 83% of the attitude towards using (ATT) E-learning among the E-PJJ students is influenced by the factors of Perceived Ease of Use (PEOU) and Perceived Usefulness (PU). ANOVA shows that the p-value (0.000) is less than α (0.05). This indicates that the regression model with the three factors, perceived ease of use (PEOU) and perceived usefulness (PU), has explained the student's attitude towards using E-learning. Furthermore, the p-values for variables PEOU and PU are well below α (0.05), which means a significant relationship exists between the ATT factors. These findings aligned with findings (Abdullah & Toycan, 2017; Fathema et al., 2015) whereby the perceived usefulness has a significant relationship with attitude.

Based on the regression coefficient of PEOU, it is 0.219. It indicates that the PEOU is positively related to the ATT. This finding can be supported by Adewole-Odesi (2014) since there is a significant relationship between Perceived Ease of Use and the attitude of

students towards E-learning; In other words, Perceived Ease of Use (PEOU) has a significant influence on attitude (ATT) ($P < 0.01$) Thus, Perceived Ease of Use (PEOU) significantly influences the attitude of students (ATT) (Johari et al., 2015), The regression coefficient for PU is 0.786, indicating that the PU positively affects the ATT. N. A. Oye et al., (2012) indicate that the perceived use of E-learning significantly affects the attitude towards using E-learning. On the other hand, Al-Rahmi et al., (2020) also claimed that perceived ease of use is strongly linked to attitude, suggesting that the more students consider e-learning simple, the better they act when using it. Besides, among both significant variables (PEOU and PU), PU has the highest beta of 0.786. This means it has the strongest influence on ATT compared to other variables. Hence, PU is the highlighted predictor of ATT, followed by PEOU with a beta of 0.219.

Based on the table for model 2, the researcher includes the variable PU and PEOU as the independent variable while the variable Actual Use (AU) is the dependent variable. The value of R square for model 2 is 0.842. It reflects that 84.2% of the Actual Use (ITU) of e-learning among the E-PJJ students is influenced by the factors of Perceived Ease of Use (PEOU) and Perceived Usefulness (PU). ANOVA shows that the p-value (0.000) is less than α (0.05). This indicates that the regression model with the three factors, Perceived Ease of Use (PEOU) and Perceived Usefulness (PU), has explained the student's actual use of E-learning.

Furthermore, the p-values for variables PEOU and PU are well below α (0.05), which means a significant relationship exists between the factors. As the regression coefficient of PEOU is 0.276, the PEOU is indicated as being positively related to the AU. Ho Cheong & Park (2005) found that Perceived Ease of Use influenced students' intention to use internet-based learning. The regression coefficient for PU is 0.697, indicating that the PU positively affects the AU. In addition, the p-value for the variable is more than α (0.05), and PU has the highest beta of 0.697. This means it has the most decisive influence on AU compared to other variables. Hence, PU is the highlighted predictor of AU, followed by PEOU with a beta of 0.276. The finding is also supported by Al-Adwan et al., (2013), who indicated that perceived usefulness (PU) has significantly influenced Actual Use (AU)

($p < 0.05$) Johari et al. (2015). It has also been indicated in previous studies that (PU) has significantly influenced the intention to use (ITU) ($P < 0.05$).

Based on the table for model 3, the researcher has included the variable Actual Use (AU) as the independent variable while the variable Attitude (ATT) as a dependent variable to test the model to investigate the relationship between Actual Use (AU) and Attitude (ATT). The value of R square for model 1 is 0.804. It reflects that 80.4% of the attitude toward using (ATT) E-learning among the E-PJJ students is influenced by students' actual use (AU). ANOVA shows that the p-value (0.000) is less than $\alpha(0.05)$. This indicates that the regression model with the AU has explained the student's ATT using E-learning. Furthermore, the p-values for variables AU are well below $\alpha(0.05)$, meaning there is a significant relationship between the factors. The regression coefficient of the ITU is 0.934 indicating that the ITU is positively related to the ATT. According to Allo (2020) this may also mean that the students had a positive attitude about the use of e-learning.

In conclusion, E-learning has become an increasingly popular learning approach in higher educational institutions due to the rapid growth of Internet technologies. This study has determined the factors that affected the relationship influencing Student Academic Performance in E-learning technology. The tables presented represent the interrelationship between the factors influencing student academic performance in E-learning technology. This study would benefit online institutions, online/distance instructors, decision-makers at all higher education levels, and online students. The implications for practices, barriers to e-learning, ongoing support by the government, study limitations, and research recommendations were discussed. This study shows that there are significant relationships between the hypotheses, as reflected in the e-learning in UiTM's setting.

This study also revealed that the attitude clearly reflected towards using E-learning among the E-PJJ students is influenced by Perceived Ease of Use (PEOU) and Perceived Usefulness (PU). The findings also have great significance in contributing to the enhancement of the

current e-learning environment. The findings of this study can be used as guidelines and to assist policymakers in ensuring that E-learning methods are comprehensively applied to all higher education institutions.

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