Factors Influencing Students' Intention to Use E-learning System

A Case Study Conducted in Vietnam

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Abstract—This study was conducted to evaluate the factors influencing students' intention to use E-learning system. Seven dimensions in this study include Computer self-efficacy, Computer experience, Enjoyment, System characteristics and Subjective norm, Perceived ease of use, and Perceived usefulness. The authors used a survey with participation of 246 respondents from 20 universities in Vietnam. The data was analyzed by using descriptive statistics, factor analysis and regression. The research found the positive effect of Computer self-efficacy, Computer experience, Enjoyment on Perceived ease of E-learning use, the effect of Enjoyment, Subjective norm, Perceived ease of E-learning on Perceived usefulness of E-learning, and the positive effect of Perceived ease of E-learning, Perceived usefulness of E-learning on Intention to use E-learning. The empirical results showed Computer self-efficacy has no impact on Perceived usefulness of E-learning, and System characteristics does not affect Perceived ease of E-learning use. Finally, this study suggests some solutions in order to help universities to attract more students in participating in E-learning although E-learning is not compulsory.

Keywords—E-learning, Intention, Student, Perceived usefulness, Perceived ease of use.

1 Introduction

With the ongoing Industry 4.0, E-learning method has become the leading choice when it comes to education. It is an effective and feasible method, taking advantage of the advancements of electronic means as well as the Internet to transfer knowledge and skills to individuals and organizations anywhere in the world at any time. The development of information technology and the Internet during the last decade has

enabled new educational delivery methods like E-learning. As a consequence, universities and colleges are using E-learning extensively. Ref [34] found that more than 1100 higher education institutions in the United States offered E-learning courses. The need for pedagogical and technical knowledge to teach in an E-learning mode is important and thus the skills necessary to teach in the E-learning environment have become a core competence for teachers. Given the expansion of E-learning, the crucial issue is how and to what extent are E-learning and information technology changing the dynamics of teaching and learning [25]. In addition, the issue of how to improve student learning outcomes is also an important subject for investigation in the educational world [17]. With rich traditional training tools, E-learning communities and online discussions, E-learning helps people expand access to training courses with low cost. From the past until now, Vietnam prefers the traditional teaching method. In other words, this traditional method takes the teacher's activity as the center and is the process of transferring information from teachers to students. The teacher - the person standing on the podium, is the living "knowledge of mankind", the student is the listener, memorizing and taking notes of everything. Due to the high emphasis on teachers, the disadvantage of traditional teaching methods is that students acquire knowledge too passively. Lectures are often simple and boring and are theory-based with little attention to students' skills; therefore, practical skills are limited. Therefore, E-learning has become a trend in recent time. The implementation of E-learning in teaching and training is an indispensable direction to deliver Vietnamese education to global education. In Vietnam, schools and universities are also having E-learning systems to help Vietnamese students learn more effectively. However, most of the universities in Vietnam have applied E-learning methods to distance learning systems but not widely applied extensively at the school itself. There are still many barriers stemming from the students' own opinions and attitudes that affect the application of E-learning. Therefore, the authors decided to study "The effect of factors on students' intention to use E-learning system". This study identifies the factors that affect students' intention to use E-learning, thereby makes some recommendations to universities to attract more students in participating in E-learning until it is officially implemented for the universities' training systems.

2 Literature Review and Hypothesis

2.1 E-learning

E-learning is an efficient learning method conducted via electronic media, typically on the Internet. E-learning is progressively expanding, especially in the areas of distance education and business enterprise training [38][21]. E-learning can be universally understood as an academic process that utilizes information and communication technology to train, convey learning content, more deeply communicate between students and teachers, and to deftly manage lecture [54].

E-learning challenges in traditional training and studying methods and provides new solutions to the critical problems that online learning is inevitably having. For

example, the role of teachers is changing from knowledge importers to knowledge communicators [22]. E-learning could be a more effective way of learning than in a crowded classroom. It is self-study and active learning [35]. In addition, E-learning uses various types of educational tools in learning and education. E-learning has the same meaning as technology-enhanced learning (TEL), computer-based instruction (CBI), computer-based training (CBT), computer-assisted instruction (CAI), Internet-based training (IBT), web-based training (WBT), online education, virtual education, virtual learning environment (VLE) (also known as the learning platform), and learning and digital education collaboration.

Theory of Reasoned Action (TRA): Theory of reasoned action (TRA) was founded by Ajzen and Fishbein in the late 1960s and expanded in the 1970s. According to TRA, the most crucial factor determining human behavior is the intention of performing such actions. Behavioral intention is the intention to perform certain behaviors. Behavioral intention is affected by two factors: a person's attitude (Attitude) about behavior and subjective norm (Subjective Norm) related to behavior.

Theory of Planned Behavior (TPB): Theory of planned behavior represents an improved development of rational action theory [2]. The introduction of the TPB proposed behavioral theory stems from the limit of behavior where people retain little control, even though the motivation of the subject is exceptionally high from subjective attitudes and standards, but in some case, they still do not act because of the effects of external conditions on the intention of behavior [2]. This theory has been supplemented by introducing other factors to control cognitive behavior (Perceived Behavioral Control) [3]. Behavioral control awareness reflects how easy or difficult it is to perform a behavior and whether its behavior is controlled or limited [3]. According to the TPB model, motivation or intention remain the fundamental motivating factor for consumers' behavior. The motives or intentions are guided by three basic prefixes: attitude, subjective norms and control of cognitive behavior.

Technology Acceptance Model (TAM): The Technology acceptance model (TAM) model was developed from the theory of reasoned action - TRA [14] and the theory of planned behavior - TPB [3] with a specific focus on examining perceived usefulness and perceived ease of use to user attitudes and intentions [10][11][44]. Following studies developed the TAM model with more variables and excluded the impact of perceived usefulness on attitudes to services.

The model of E-learning: Personal competence and subjective elements influence students' attitudes to E-learning and the intention to implement the E-learning system [36]. While the capability to access the system is not a prominent cause because in developed countries, there is a compulsory infrastructure of information system. Accordingly, the most important factor is your potential to use the E-learning system. Ref [36] explained personal ability was a motivating factor within each individual; according to the social learning theory of psychologist the more confident you are in your ability, the better the learning process will be [36].

Ref [32] indicated that the types of E-learning presentation are related to the intended use. Presentation, which includes both text and audio, makes the intended use and concentration of the learning process higher than the other two forms of presentation.

Ref [39] proved the close relationship between awareness of external control and awareness of the ease of use. In addition, if students are interested, applying the E-learning system will be easier. However, the theoretical framework has eliminated the attitude of users because they think that opinion has no significant influence on the use. But the external factors are important elements to accurately assess the technology acceptance.

Ref [27] have applied the theoretical framework in the model based on the acceptance model of TAM technology, developing additional exogenous elements such, as computer self-efficiency, computer experience, enjoyment, computer anxiety, organizational accessibility, system characteristics and subjective norms.

Computer self-efficacy: An individual's ability to use a computer is an individual's ability to perform computer-related operations using computer systems [45]. In the current technological context, the capability of students with high computer skills will encourage them to become more confident and motivated with the adoption of the E-learning system. Moreover, they who are highly competent in computer use will be more willing to employ the E-learning system than individuals with less computer potential [26]. According to [8] Computer self-efficacy has been found to significantly influence individuals' expectations for the results of computer use, their emotional response to computers (influence and anxiety), as well as their actual use of computers. An individual's ability and expectation of results have been found to be positively influenced by the encouragement of others in their workgroup, as well as the use of others' computers. Therefore, self-efficacy represents an important personal trait, regulating the organization's influence (such as encouragement and support) in an individual's decision to use a computer. Understanding your self-efficacy, then, is critical to the successful implementation of systems in organizations. The existence of a reliable and valid measure of their own self-efficacy makes the assessment feasible and meaningful for the organization's support, training and implementation. [1] pointed out that the concept of Computer self-efficacy (CSE) has recently been proposed as important for personal behavioral research in information technology. This study describes how the two types of beliefs about Computer self-efficacy, general efficiency and effectiveness of specific tasks, are built across different computing tasks by showing CSE trust. The general will strongly predict the next CSE specific belief. [47] have shown that the use of a learning management system shows that Computer self-efficacy plays an important role in mediating the impact of anxiety on ease of use. easy. This role is observed by the effectiveness of computers (1) reducing the power and importance of the impact of anxiety on ease of use and (2) having a strong and meaningful relationship with the anxiety of computers. The findings show the importance of self-efficacy as a mediator between computer anxiety and the perceived ease of use of a learning management system (LMS).

H1: Computer self-efficacy has a positive impact on Perceived ease of E-learning use.

H2: Computer self-efficacy has a positive impact on Perceived usefulness of E-learning.

Computer experience: Computer experience can be instantly understood as the personal understanding of using a computer, which is all the direct manipulations, websites or purposes when working with a user's computer. Sandra carefully discussed the success of an E-learning system based on the user's experience on computers and the Internet). Ref [33] pointed that Computer experience was found to be significantly related to more positive attitudes on all subscales. Ref [42] showed that although computer experience is the most prominent predictor of technophobia, it is not the only predictor— age, gender, teaching experience, computer availability, ethnicity, and school socioeconomic status also play an important role in predicting technophobia. Computer playfulness and computer experience were found to be significant mediators of the effect that system experience has on ease of use [19].

H3: Computer experience has a positive impact on Perceived ease of E-learning use.

Enjoyment: Ref [47] conducted empirical research on student intentions of a web-based learning system. The authors have combined the technology intent model (TAM) to include interest as an intrinsic motivation. The study expanded TAM to include cognitive interest in order to clarify student Intentions behavior in using web-based learning system from a motivational perspective. This study was conducted on two different subjects (China versus Canada). Ref [31] conducted a study in the role of external and internal motivation for students the intention of internet-based learning media. The authors used the technology intent model as a theoretical basis for their research. They demand that perceiving usefulness and perceiving ease of use as external motives and that enjoyment is intrinsic motivation. Ref [50] conducted empirical research on the causal relationship between cognitive enjoyment and ease of use. Ref [52] argues that enjoyment is the level of user interest in using a system regardless of the possible consequences of its application. The causal relationship between enjoyment and the perceived ease of using E-learning has also been confirmed in Lee's research [30]. Ref [43] studied the role of cognitive usefulness, perceived ease of use, and found enjoyment in the intention to use the Internet. The findings indicate that the usefulness used is negligible, while the cognitive enjoyment used is strongly correlated with internet usage. In short, interest seems to be a very important factor that can influence e-learning intent in higher education. Therefore, the researcher will consider interest as important variables to be studied.

H4: Enjoyment has a positive impact on Perceived ease of E-learning use.

System characteristics: Function of an E-learning system represents the ability to give users flexible access to the structure [37]. When an electronic learning system incorporates audio, visual and textual methods, it will increase user interactivity [32]. System quality measures the functionality of a system which comprises usability, availability and response time [12]. It is also "concerned with whether or not there are "bugs" in the system, the consistency of the user interface, ease of use, response rates in interactive systems" [7]. The importance of these features are confirmed in a study whereby online users were found to be very particular on issues such as easiness to read and navigate [49]. It was also established that a responsive web site proves to be highly important to end-users [41]. Usage generally refers to "either the amount of effort expended in interacting with an information system or, less frequently, as the

number of reports or other information products generated by the information system per unit time" [46]. In addition, some authors suggest that usage refers to the nature, quality and appropriateness of the actual system use and not just simply a measure of time spent on the system [12].

H5: System characteristics has a positive impact on Perceived ease of E-learning use.

H6: System characteristics has a positive impact on Perceived usefulness of E-learning.

Subjective norms: Stakeholder influence means that students choose to study E-learning because those around them, such as relatives or friends, also use the system. Moreover, Ref [36] also pointed out that this factor has a significant effect on the usefulness of E-learning. Subjective norm is the perception of the person most people who think that he should or should not perform the behavior in question [14]. It is also conceptualized as standard beliefs [53], social influence [28], and social norms [24], and was initially part of TRA [14]. However, subjective norm mentioned is a problematic aspect of [10] it was removed from TAM. Despite this argument, many studies have incorporated its formulation thereafter. In most cases, subjective norms are directly and significantly related to one's intention to use the system [48]. The reason is that when everyone in an individual environment thinks he should adopt the system; he tends to adhere to these ideas and accept the system. Ref [52] argue that this mechanism, which they call the compliance effect, occurs only in obligatory situations. Because our VLE environment constitutes a mandatory environment (meaning participants must use the system to complete the course), we follow their logic. A second mechanism through which subjective standards influence technology adoption is through cognitive usefulness. This is the mechanism of internalization [52]. When a person realizes that important referrals think he should use the system, he incorporates the referrer's trust into his own belief system: because a large number of people can't be wrong In their opinion, the system must be useful in their purpose. Localization can take place regardless of whether system application is mandatory or voluntary. On the basis of social mechanisms of compliance and internalization, we hypothesize,

H7: Subjective norm has a positive impact on Perceived usefulness of E-learning.

Perceived ease of use: Perceived ease of E-learning use is the degree to which an individual's confidence in exercising a technology system grants them freedom and comfort [10]. Previous studies have also shown that perceived ease of E-learning use positively and significantly affects perceptions usefulness of E-learning [6][10][23]. TAM suggests that perceived ease of use and perceived usefulness of information Technology (IT) are the main determinants factors of IT usage. Ref [10] defines perceived ease of use as, "the degree to which an individual believes that using a particular system would be free of physical and mental effort". The two major keys constructs of TAM, perceived usefulness and perceived ease of use, have capability to predict an individual's attitude towards using a particular system. Both constructs perceived ease of use and perceived usefulness will influence an individual's attitude [10] defined attitude as individual's positive or negative assessment of the behavior

and is a function of Perceived Usefulness and Perceived Ease of Use. Attitude will influence the Behavioral Intention of using particular system, and in sequence, actual use of use the system. Attitude will be predicted by individual's Behavioral Intention. Behavioral Intention refers to individual's intention to perform a behavior and is a function of Attitude and Perceived Usefulness [10].

H8: Perceived ease of E-learning use has a positive impact on Perceived usefulness of E-learning.

H9: Perceived ease of E-learning use has a positive impact on Intention to use E-learning.

Perceived usefulness: Perceived usefulness is the level of loyal users who have in the system that will promote them to improve their performance [10]. [10] defined perceived usefulness as "the degree of which a person believes that using a particular system would enhance his or her job performance". Perceived usefulness is reported to be one of the factors that significantly influence user intention.

H10: Perceived usefulness of E-learning has a positive impact on Intention to use E-learning.

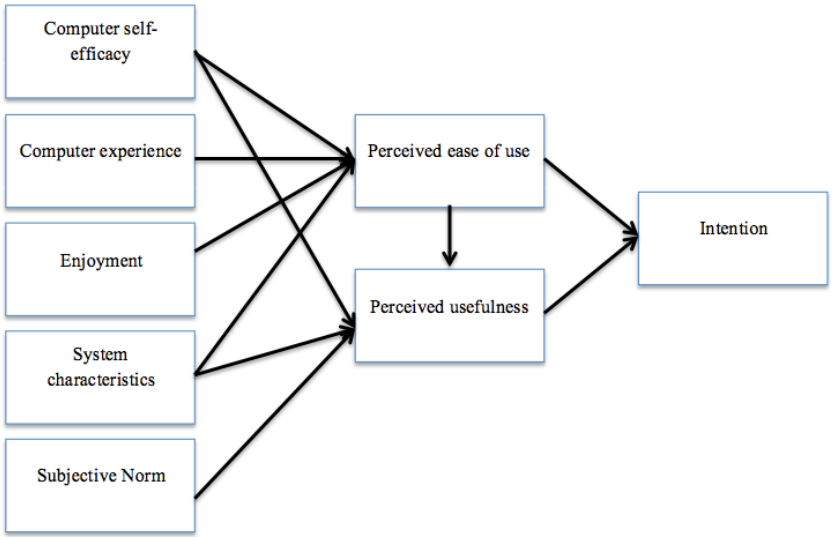

Fig. 1. Conceptual Model

3 Methodology

3.1 Instrument

The authors designed a survey questionnaire in two main parts. Part A is the personal information section including gender, region, computer and E-learning usage status. Simultaneously, there are also questions to select the survey sample, about the status of E-learning (used, is using, and has never used). Survey results with used and

is using will be discarded by the author. Part B is perceptive questions related to the use of computers and E-learning systems through a 5-point Likert scale with 30 observed variables (1-strongly disagree; 2- disagree; 3-neutral; 4-agree; 5-Strongly agree). The scale was built by the authors based on questions that survey the confirmed status of E-learning use of student questions in the test of factors affecting their intentions based on the selective inheritance of the questions used in the questionnaire of previous studies.

3.2 Sample

The size of the sample depends on the analytical method. According to the research of [20][4], the minimum sample size is 5 times the total number of observed variables. This sample size is suitable for research using factor analysis [9][13]. The sample size must satisfy the following formula: n >= 5*m = 5*22 =110 (where: n is the sample size; m is the number of questions in the survey). Therefore, this study requires a minimum of 110 survey samples. In addition, according to [16], factor analysis requires at least 200 observation samples. Therefore, to improve the reliability and accuracy of the research model, the sample will be selected as n = 264. 246 participants of the study are all students from freshmen to senior in Vietnam who have been or have not used E-learning online learning method.

Table 1. Personal characteristics of participants

Characteristics		Number	Percentage
Gender	Male	56	22.8%
	Female	187	76%
	Other	2	0.8%
Year of academic	First-year	136	55.3%
	Second-year	35	14.2%
	Third-year	72	29.3%
	Above Forth-year	3	1.2%
Hometown	City	105	42.3%
	Countryside	142	57.7%
Having computer	Yes	233	95%
	No	13	5%

3.3 Method

Data were accumulated by questionnaires, surveyed through the distribution of questionnaires, and collected as soon as the research subjects completed their answers. Each question was measured on a 5-point Likert scale. The survey was conducted within 2 weeks. After the data collection process is completed, the team will filter out the inappropriate questionnaires, enter the data into SPSS 20 software, then verify and analyze the data obtained by Cronbach's Alpha, EFA, CFA, SEM, Bootstrap and ANOVA.

4 Results

4.1 Reliability analysis

Table 2. Reliability rating measured by Cronbach's Alpha

Observed variables	Average scale if variable type	Variance of scales if variable type	Correlation between variable - sum	Cronbach Alpha if variable type
Computer self-efficacy (KNSDMT): Cronbach's alpha: 0.790				
CSE1	6.56	2.572	0.702	0.638
CSE2	6.51	3.064	0.587	0.763
CSE3	6.31	2.476	0.619	0.737
Computer Experience (TNMT): Cronbach's alpha:0.805				
CE1	7.41	2.121	0.625	0.771
CE2	7.43	2.432	0.660	0.729
CE3	7.09	2.298	0.682	0.703
System characteristics (CNHT): Cronbach's alpha:0.743				
SC2	10.72	2.667	0.618	0.634
SC3	10.70	2.653	0.639	0.621
SC4	11.13	3.328	0.427	0.741
SC5	11.00	3.224	0.471	0.719
Enjoyment (TT): Cronbach's alpha:0.847				
E1	6.94	3.992	0.657	0.845
E2	6.54	3.135	0.778	0.725
E3	6.72	3.072	0.731	0.776
Subjective norm (CBLQ): Cronbach's alpha:0.866				
SN1	6.47	2.860	0.690	0.862
SN2	6.71	2.687	0.783	0.775
SN3	6.76	2.803	0.763	0.796
Perceived Ease of Use (DSD): Cronbach's alpha:0.841				
PEU1	6.83	2.383	0.720	0.765
PEU2	6.88	2.218	0.743	0.740
PEU3	6.87	2.393	0.654	0.828
Perceived Usefulness (HI): Cronbach's alpha:0.833				
PU1	7.28	1.554	0.758	0.705
PU2	7.28	1.511	0.760	0.701
PU3	6.99	1.732	0.573	0.885
Intention (YD): Cronbach's alpha:0.781				
BI1	7.01	2.358	0.618	0.706
BI2	7.28	1.940	0.688	0.628
BI3	7.30	2.668	0.569	0.759

The test results show that the correlation coefficient of the total observed variables with the scales is high, all over 0.4. This shows that the ascertained variables receive a sound correspondence with the overall scale. The Cronbach's alpha coefficient of the scales are all above 0.7, so the scales for the official survey are reliable. No observed variables were removed, and the scale is appropriate to use for the next EFA analysis

4.2 Exploratory Factor Analysis (EFA)

To analyze the exploratory factor analysis (EFA), so we used Principal Axis Factoring method with Promax rotation. Because the Principal Axis Factoring method with Promax rotation will reflect the data structure more accurately than the Principal Components method with Varimax rotation [4]. Factor loading of each factor is greater than 0.5. According to [20], factor loading is a criterion to ensure the practical significance of EFA. Factor loading greater than 0.5 is of practical significance.

The results of the analysis of exploratory factors and observed variables yielded good outcomes, with a coefficient of KMO = 0.782 and Sig = 0. KMO is a criterion to consider the appropriateness of EFA, KMO value is in the range from 0.5 to 1 then the factor analysis is appropriate. Bartlett's test looks at the hypothesis of a correlation between zero observed variables in the population. If this test is statistically significant with a value of Sig less than 0.05, the observed variables are correlated with each other as a whole. The cumulative of variance of the seventh factor is 63,723% and the eigenvalues value of this factor is 1,151.

Table 3. KMO and Bartlett's test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.782
Bartlett's Test of Sphericity	Approx. Chi-Square	2812.733
	df	231
	Sig.	0.000

The KMO value is 0.681 and Sig < 0.05. It shows that the discovery factor analysis result is highly reliable. The total value of extracted variance of this factor is 55,664 > 50% and the value of eigenvalues is 2,091 > 1. Therefore, this correlational analysis ensures the ability to represent the initial data.

4.3 Confirmatory Factor Analysis (CFA)

The results show that Chi-square/df = 2,471 (≤ 3), TLI = 0.862, CFI = 0.888, GFI = 0.841 are all greater than 0.8, RMSEA coefficient = 0.077 (≤ 0.08), so the model has a fit. The results of the P-value of the observed variables representing the factors are all < 0.05. Therefore, the observed variables are confirmed to be able to represent well for the factor in the CFA model.

The results also showed that except for the weight of the observed variable SC5 (understand the content through reasonable interface design) equal to 0.360 (< 0.5). The remaining weights are all > 0.5, so the observed variable SC5 (interpreting the

content through a streamlined interface design) needs to be considered for removal from the model so that the scales can achieve convergent values.

After removing SC5 observation variables (understanding the content through reasonable interface design) from the research model, the results of the observed variables representing the factors are not as good as the previous model. Therefore, it is not advisable to remove the SC5 observation variable (understand content through logical interface design) from the model. However, the authors considered both the research process and discovered the observed variable SC4 (useful functions for learning) with the lowest load factor (= 0.500) and conducted a rejection test out of the model.

As a result, the indexes of the model have been improved better. The value of Chi-square / df = 2.397 (formerly 2,471), TLI = 0.874 (formerly 0.862), CFI = 0.899 (formerly 0.888), GFI = 0.850 (formerly was 0.841), RMSEA coefficient = 0.075 (previously 0.077). The result of the P-value of the observed variables representing the factors is all equal to 0.000, so removing SC4 observation variables (practical functions for learning) from the model is suitable.

The total coefficients of extraction variance and the general reliability of the scales all attain values higher than 0.5. Therefore, the scale achieves convergence and unidirectional values. As such, the research scales ensure the analytical requirements.

4.4 Structural Equation Modeling (SEM)

The criteria to measure the suitability of the model show that Chi-square/df = 2.502 TLI = 0.864, CFI = 0.887, GFI = 0.843 are all greater than 0.8, RMSEA coefficient = 0.078 < 0.08. As a result, the model Figure achieves research data consistency

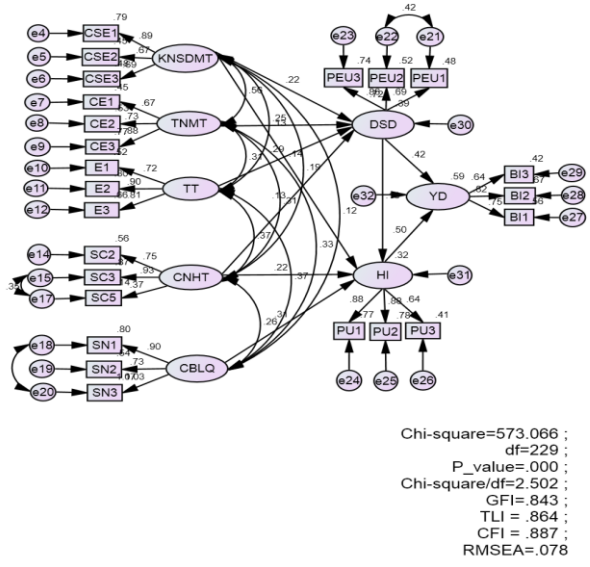

Fig. 2. SEM results

From Table 4, we can see that the hypothesis H5 (System characteristics has a positive impact on Perceived ease of E-learning use.), and H2 (Computer self-efficacy has a positive impact on Perceived usefulness of E-learning) should be rejected.

With 95% confidence, the greater the absolute value of these weights, the stronger the corresponding concept of independence will affect the dependent variable. In this case, "Perceived Usefulness" is the most powerful factor affecting "Intention" (standardized regression weight is 0.505). Followed by "Perceived Ease of Use" (standardized regression weight is 0.411). "Enjoyment" is the strongest factor affecting "Perceived Ease of Use" (standardized regression weight is 0.325), followed by "Computer experience" (regression weight has standardized is 0.281) and the lowest is "Computer self-efficacy" (standardized regression weight is 0.233). For "Perceived Usefulness", "Subjective norm" is the most powerful factor (the standardized regression weight is 0.294), the second is "Perceived Ease of Use" (standardized regression weight is 0.250). And lowest is "System characteristics" (standardized regression weight is 0.231).

4.5 Testing research hypotheses

Table 4. Hypothesis test's results

Dependent Variable	Hypothesis	Content	Coefficient	Sig Coefficient	Result	Impact level
Perceived Ease of Use	H1	Computer self-efficacy has a positive impact on Perceived ease of E-learning use.	0.243	0.007	Accepted	3
	H3	Computer experience has a positive impact on Perceived ease of E-learning use.	0.291	0.002	Accepted	1
	H4	Enjoyment has a positive impact on Perceived ease of E-learning use.	0.272	0	Accepted	2
	H6	System characteristics has a positive impact on Perceived usefulness of E-learning.	0.376	0.006	Accepted	1
	H7	Subjective norm has a positive impact on Perceived usefulness of E-learning.	0.143	0	Accepted	3
	H8	Perceived ease	0.151	0	Accepted	2

		of E-learning has a positive impact on Perceived usefulness of E-learning.				
	H9	Perceived ease of E-learning use has a positive impact on Intention to use E-learning.	0.553	0	Accepted	1
	H10	Perceived usefulness of E-learning has a positive impact on Intention to use E-learning.	0.273	0	Accepted	2

5 Discussion and Conclusion

The research shows that there are 7 factors that are considered to influence students' intention to use E-learning method, which are Computer self-efficacy, Computer experience, Enjoyment, System characteristics and Subjective norm, Perceived ease of use, and Perceived usefulness.

Through testing the research model with SEM method, the results show that the hypotheses accepted with a 95% significance level include H1 (Computer self-efficacy has a positive impact on Perceived ease of E-learning use), H3 (Computer experience has a positive impact on Perceived ease of E-learning use), H4 (Enjoyment has a positive impact on Perceived ease of E-learning use), H6 (System characteristics has a positive impact on Perceived usefulness of E-learning), H7 (Subjective norm has a positive impact on Perceived usefulness of E-learning), H8 (Perceived ease of E-learning has a positive impact on Perceived usefulness of E-learning), H9 (Perceived ease of E-learning use has a positive impact on Intention to use E-learning), H10 (Perceived usefulness of E-learning has a positive impact on Intention to use E-learning). The degree of impact of each factor on student's intention to use is different. In which, “Perceived usefulness” is the biggest, followed by “System characteristics”, then “Computer experience”, fourth is “Perceived ease of E-learning use”, “Enjoyment” is ranked fifth, sixth is “Computer self-efficacy,” and the lowest is “Subjective norm”.

The role of lecturers is critical in the successful implementation of E-learning. Lecturers must properly grasp the innovative learning method and be the one who takes the initiative in participating in carefully preparing electronic lessons, case studies, exercises for teaching, and for self-study of learners. Therefore, there must be a form of equipment investment, support funding, training, exchange experience with the help of new technology for the teaching staff to meet the most modern teaching requirements as having methods, skills, ability to apply IT to teaching, design of

electric lecture of good quality, capable of using advanced teaching facilities, self-study capability, and scientific self-study.

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7 References

[1] Agarwal, R., Sambamurthy, V., & Stair, R. M. (2000). The evolving relationship between general and specific computer self-efficacy—An empirical assessment. *Information systems research*, *11*(4), 418-430. https://doi.org/10.1287/isre.11.4.418.11876

[2] Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In *Action control* (pp. 11-39). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-69746-3_2

[3] Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, *50*(2), 179-211. https://doi.org/10.1016/0749-5978(91)90020-t

[4] Anderson, J.C & Gerbing, D.W (1988) "Structural Equation Modeling in practice: a review and recommended two-step approach", *Psychological Bulletin*, *103* (3): 411-423. https://doi.org/10.1037/0033-2909.103.3.411

[5] Bandura, A., & Walters, R. H. (1977). *Social learning theory* (Vol. 1). Englewood Cliffs, NJ: Prentice-hall.

[6] Cheng, Y. M. (2011). Antecedents and consequences of e-learning acceptance. *Information Systems Journal*, *21*(3), 269-299. https://doi.org/10.1111/j.1365-2575.2010.00356.x

[7] Chiu, C. M., Hsu, M. H., Sun, S. Y., Lin, T. C., & Sun, P. C. (2005). Usability, quality, value and e-learning continuance decisions. Computers & Education, 45, 399-416. https://doi.org/10.1016/j.compedu.2004.06.001

[8] Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS quarterly*, 189-211. https://doi.org/10.2307/249688

[9] Comrey, A. L., & Lee, H. B. (2013). *A first course in factor analysis*. Psychology press.

[10] Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340. https://doi.org/10.2307/249008

[11] Davis, F. D. (1993). User acceptance of information technology: system characteristics, user perceptions and behavioral impacts. *International journal of man-machine studies*, *38*(3), 475-487. https://doi.org/10.1006/imms.1993.1022

[12] DeLone, W. H., & McLean, E. R. (2004). Measuring E-commerce success: applying the DeLone & McLean Information Systems Success Model. International Journal of Electronic Commerce, 9(1), 31-47. https://doi.org/10.1080/10864415.2004.11044317

[13] Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological methods*, *4*(3), 272. https://doi.org/10.1037/1082-989x.4.3.272

[14] Fishbein, M. (1975). Ajzen. i.(1975). *Belief, attitude, intention and behaviour: An introduction to theory and research*.

[15] Fishbein, M., & Ajzen, I. (1977). Belief, attitude, intention, and behavior: An introduction to theory and research.

[16] Gorsuch, R. L. (1990). Common factor analysis versus component analysis: Some well-and little-known facts. *Multivariate Behavioral Research*, *25*(1), 33-39. https://doi.org/10.1207/s15327906mbr2501_3
[17] Gravoso, R.S., Pasa, A.E., & Mori, T. (2002). Influence of students' prior learning experiences, learning conceptions and approaches on their learning outcomes. Retrieved from: www.ecu.edu.au/conferences/herdsa/main/papers/ref/pdf/Gravoso.pdf
[18] Galy, E., Downey, C., & Johnson, J. (2011). The effect of using E-learning tools in online and campus-based classrooms on student performance. *Journal of Information Technology Education: Research*, *10*(1), 209-230. https://doi.org/10.28945/1503
[19] Hackbarth, G., Grover, V., & Mun, Y. Y. (2003). Computer playfulness and anxiety: positive and negative mediators of the system experience effect on perceived ease of use. *Information & management*, *40*(3), 221-232. https://doi.org/10.1016/s0378-7206(02)00006-x
[20] Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (1998). *Multivariate data analysis* (Vol. 5, No. 3, pp. 207-219). Upper Saddle River, NJ: Prentice hall.
[21] Harandi, S. R. (2015). Effects of E-learning on Students' Motivation. *Procedia-Social and Behavioral Sciences*, *181*, 423-430. https://doi.org/10.1016/j.sbspro.2015.04.905
[22] Haverila, M., & Barkhi, R. (2009). The influence of experience, ability and interest on eLearning effectiveness. *European Journal of Open, distance and E-learning*, *12*(1).
[23] Hassanzadeh, N. (2012). Scalable data collection for mobile wireless sensor networks.
[24] Hsu, C. L., & Lu, H. P. (2004). Why do people play on-line games? An extended TAM with social influences and flow experience. *Information & management*, *41*(7), 853-868. https://doi.org/10.1016/j.im.2003.08.014
[25] Janicki, T., & Steinberg, G. (2003). Evaluation of a computer-supported learning system. Decision Sciences The Journal of Innovative Education, 1, 203-223. https://doi.org/10.1111/j.1540-4609.2003.00018.x
[26] Hsia, J. W., Chang, C. C., & Tseng, A. H. (2014). Effects of individuals' locus of control and computer self-efficacy on their E-learning acceptance in high-tech companies. *Behaviour & Information Technology*, *33*(1), 51-64. https://doi.org/10.1080/0144929x.2012.702284
[27] Kanwal, F., & Rehman, M. (2014). E-learning Adoption Model: A case study of Pakistan. *Life science journal*, *11*(4s), 78-86.
[28] Karahanna, E., Straub, D. W., & Chervany, N. L. (1999). Information technology adoption across time: a cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS quarterly*, 183-213. https://doi.org/10.2307/249751
[29] Kerka, S. (1996). Distance Learning, the Internet, and the World Wide Web. ERIC Digest.
[30] Lee, M. C. (2010). Explaining and predicting users' continuance intention toward E-learning: An extension of the expectation–confirmation model. *Computers & Education*, *54*(2), 506-516. https://doi.org/10.1016/j.compedu.2009.09.002
[31] Lee, M. K. O., Cheung, C. M. K., and Chen, Z. 2005, 'Acceptance of Internet-based learning medium: the role of extrinsic and intrinsic motivation', Information & Management, Vol. 42, No. 8, pp. 1095-104. https://doi.org/10.1016/j.im.2003.10.007
[32] Liu, S. H., Liao, H. L., & Pratt, J. A. (2009). Impact of media richness and flow on E-learning technology acceptance. *Computers & Education*, *52*(3), 599-607. https://doi.org/10.1016/j.compedu.2008.11.002
[33] Loyd, B. H., & Gressard, C. (1984). The effects of sex, age, and computer experience on computer attitudes. *AEDS journal*, *18*(2), 67-77. https://doi.org/10.1080/00011037.1984.11008387

[34] Newman, F., & Scurry, J. (2001). Online technology pushes pedagogy to the forefront. The Chronicle of Higher Education, 47, July 13th, B7-B10.
[35] Obringer, L. A. (2001). How E-learning works. *Retrieved September*, *13*, 2008.
[36] Park, S. Y. (2009). An analysis of the technology acceptance model in understanding university students' behavioral intention to use E-learning. *Journal of Educational Technology & Society*, *12*(3), 150-162.
[37] Pituch, K. A., & Lee, Y. K. (2006). The influence of system characteristics on E-learning use. *Computers & Education*, *47*(2), 222-244. https://doi.org/10.1016/j.compedu.2004.10.007
[38] Průcha, J., Walterová, E., Mareš, J. Pedagogický slovník, Praha, Portál, 4. Upravené vydání, (2003), ISBN 80-7367-416-5 (as cited in Sokolováa Marcela, (2011), Page. 174)
[39] Ramírez-Correa, P. E., Arenas-Gaitán, J., & Rondán-Cataluña, F. J. (2015). Gender and acceptance of E-learning: a multi-group analysis based on a structural equation model among college students in Chile and Spain. *PloS one*, *10*(10). https://doi.org/10.1371/journal.pone.0140460
[40] Ramayah, T., & Lee, J. W. C. (2012). System characteristics, satisfaction and e-learning usage: a structural equation model (SEM). *Turkish Online Journal of Educational Technology-TOJET*, *11*(2), 196-206.
[41] Robbins, S., & Stylianou, A. (2003). Global corporate web sites: an empirical investigation of content and design. Information & Management, 40(3), 205-212. https://doi.org/10.1016/s0378-7206(02)00002-2
[42] Rosen, S. S. (1995). *U.S. Patent No. 5,453,601*. Washington, DC: U.S. Patent and Trademark Office.
[43] Tan, M. and Teo, T. S. H. 2000, 'Factors influencing the adoption of Internet banking', Journal of the AIS, Vol. 1, No. 1es, pp. 5.
[44] Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information systems research*, *6*(2), 144-176. https://doi.org/10.1287/isre.6.2.144
[45] Tennyson, R. D. (2010). Historical Reflection on Learning Theories and Instructional Design, Contemporary Educational Technology, 1 (1), 1-16. *Assessed on*, *21*(07), 2013.
[46] Trice, A. W., & Treacy, M. E. (1988). Utilization as a dependent variable in MIS research. Data Base, Fall/Winter, 33-41.
[47] Saadé, R. G., & Kira, D. (2009). Computer anxiety in e-learning: The effect of computer self-efficacy. *Journal of Information Technology Education: Research*, *8*(1), 177-191. https://doi.org/10.28945/166
[48] Schepers, J. J. L., & Wetzels, M. G. M. (2006, May). Technology acceptance: a meta-analytical view on subjective norm. In *Proceedings of the 35th European Marketing Academy Conference, Athens, Greece*.
[49] Smith, B. A., & Merchant, E. J. (2001). Designing an attractive web site: variables of importance. Paper presented at the Proceedings of the 32nd Annual Conference of the Decision Sciences Institute, San Francisco, CA.
[50] Sun, H. and, Zhang, P. 2005, 'An Empirical Study on Causal Relationships between Perceived Enjoyment and Perceived Ease of Use', Paper presented at the of the Fourth Annual Workshop on HCI Research in MIS (Las Vegas, USA.).
[51] Venkatesh, V. (1999). Creation of favorable user perceptions: Exploring the role of intrinsic motivation. *MIS quarterly*, 239-260. https://doi.org/10.2307/249753
[52] Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, *46*(2), 186-204. https://doi.org/10.1287/mnsc.46.2.186.11926

[53] Vijayasarathy, L. R. (2004). Predicting consumer intentions to use on-line shopping: the case for an augmented technology acceptance model. *Information & management*, *41*(6), 747-762. https://doi.org/10.1016/j.im.2003.08.011

[54] Wagner, C. S., & Leydesdorff, L. (2005). Network structure, self-organization, and the growth of international collaboration in science. *Research policy*, *34*(10), 1608-1618. https://doi.org/10.1016/j.respol.2005.08.002

[55] Setyarini, T. A., Mustaji, M., & Jannah, M. (2020). The Effect of Project-Based Learning Assisted PANGTUS on Creative Thinking Ability in Higher Education. *International Journal of Emerging Technologies in Learning (iJET)*, *15*(11), 245-251. https://doi.org/10.3991/ijet.v15i11.12717

[56] Rahmelina, Liranti, Fadil Firdian, Ilham Tri Maulana, Hesty Aisyah, and Jufriadif Na'am. "The Effectiveness of the Flipped Classroom Model Using E-learning Media in Introduction to Information Technology Course." *International Journal of Emerging Technologies in Learning (iJET)* 14, no. 21 (2019): 148-162. https://doi.org/10.3991/ijet.v14i21.10426

[57] Zakaria, N. H., Phang, F. A., & Pusppanathan, J. (2019). Physics on the Go: A Mobile Computer-Based Physics Laboratory for Learning Forces and Motion. *International Journal of Emerging Technologies in Learning (iJET)*, *14*(24), 167-183. https://doi.org/10.3991/ijet.v14i24.12063

[58] Zhu, C. (2018). Construction of the Network Learning Platform for the Course Building Space Transformation based on Grid. *International Journal of Emerging Technologies in Learning (iJET)*, *13*(05), 201-211. https://doi.org/10.3991/ijet.v13i05.8437

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