A study of mediating effect of attitude on perceived ease of use and students intention to use online learning platform among online learning institutions in Malaysia

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Abstract

The purpose of this study is to develop an understanding on the mediating effect of attitude on perceived ease of use and students' intention to use online learning platform in Malaysia. In this study, Perceived ease of use is defined as a degree to which a student believes that using an online learning platform would be free from effort. Attitude is defined as the probability that a person will show a specified behavior in a specified situation. Intention is the person's readiness cognitive representation to carry out a given behavior. The Structural Equation Model (SEM) was used to analyze the casual relationships between the independent variable, mediating variable and the dependent variable. The model was developed and later tested by adopting the Partial Least Square (PLS) procedure on data collected from a survey on online distance learning (ODL) students in Klang Valley that yielded 305 usable questionnaires. The results showed that attitude is partially mediating the relationship between perceived ease of use and intention in students' intention to use online learning platform in Malaysia. It is important to do the study utilizing experimental design by capturing longitudinal data in online learning platform using robust measures. The findings imply that the relationship between attitude and the willingness of the students to use online learning platform may dwell in attitude's influence on students' intention, and that attitude plays crucial function within the ODL institutions. It also will allow the ODL institutions to develop high quality online learning platform..

Keywords: Attitude, Perceived Ease of Use, Intention, Online Distance Learning

Introduction

There are various definitions given by academicians with regards to online learning. Most of them give definition of online learning as learning that take place through internet. This definition covers the availability of course material and instruction interacting, assessment and communicating on online platform (Cavanaugh, 2001; Maddux, Liu, Cummings, 2010). Malopinsky, Kirkley, Stein, & Duffy (2000); Schank (2001) and many studies suggested that online learning are referred to course material conveyed via internet. Most of higher education institutions depend on information technology to establish online courses. In view of that, it is vital to do research and discover what the factors that have influence and the development of online learning students' behavior to accept and use the online learning platform. The purpose of this research is to establish the linkage and mediating effect of attitude, perceived ease of use and intention to use online learning platform among online learning institutions in Malaysia.

Literature Review

Underpinning theory

One of the widely used models in technology acceptance and used is Technology Acceptance Model (TAM). This model was proposed by Davis in year 1986. Davis (1993) suggested the use of TAM to examine the technology impact on the behavior of the person. The main point of the model is the process of technology usage which includes two main factors; perceived usefulness and perceived ease of use that influence the intention in technology usage. TAM is proven in helping to explain and predict user behaviors of information technology (Legris, Ingham & Collerette, 2003). The user of technology system is influenced by the person perceived usefulness, perceived ease of use, attitude and behavioral intentions towards the system (Park, 2009). Nevertheless, TAM only gives broad details if technology being adopted by people who want to use it. Therefore, with regards to TAM and its modification and extension as to related literature, we come out with a conceptual model that enables to forecast students' intentions to use online learning platform.

Perceived ease of use towards attitude

Users' prefer to use the online learning because it is effortless but they still can increase their knowledge and the performance. Cheng and Chen (2011) describe perceived ease of use as a dominant factor that motivates the users' attitude. It means that individual attitudes toward using online learning are determined by the perceived ease of use (PEU). PEU is a measure of users' perceptions and on how easy to use online learning. It refers to the expectation of the users towards the online learning to be easy to learn and use.

A key purpose of TAM is to provide a basis for tracing the impact of PEU towards attitudes. Liaw and Huang (2003) supported the study by suggesting that perceived ease of use (PEOU), and perceived usefulness (PU) are the two most important factors in explaining the attitude towards the use of online learning system.

Following these finding, in this study, we assume the PEU has positive relationship with attitude. It is thus hypothesized that:

H1: Perceived ease of use has positive and significant relationship with attitude.

Perceived ease of use towards intention

Perceived ease of use directly affects perceived usefulness and both determine the behavioral intention to use and eventually to the actual use of the system (Viehland & Leong, 2007). This is supported by prior research that empirically found a positive relationship between perceived ease 14 of use and perceived usefulness as critical factors on the use of telecommunication technologies (Agarwal et al., 2000).

Perceived ease of use explains the user's perception of the amount of effort required to utilize the system or extent to which a user believes that using a particular technology will be effortless (Davis et al., 1989). Perceived ease of use has been established from previous research to be an important factor influencing user acceptance and usage behavior of information technologies (Igbaria, Livari, &Maragahh, 1995).

Following these findings, in this study, we assume perceived ease of use of the system will be positively related to behavior intention in using online learning platform. Thus, it is hypothesized that:

H2: Perceived ease of use has positive and significant relationship with intention.

Attitude

Attitude may also have an effect beyond a direct impact on intention. Kim, Chun, & Song (2009) define the attitude toward a behavior as an individual's positive or negative evaluation of performing the behavior. The attitude guides the individual's behavior by filtering information and by shaping his or her perception of the world (Fazio, 1986). Ajzen and Fishbein, (1980) shows that attitude involves an individual's judgment that performing a behavior is good or bad and also a general evaluation that an individual is inclined or disinclined to perform the behavior.

Davis (1989) describes the users' behavioral intention in online learning determined by the attitude of the users. According to Shen & Chiou, (2009), attitude correlates directly towards the intention which shows the users intent to use the technology system based on the positive behaviors towards it. The claim is consistent with the empirically validated previous studies that show the positive relationship between attitude and the users' intention (Cheung & Vogel, 2013; Chang, Yan & Tseng, 2012).

Following these findings, in this study, we assume the students' attitude will be positively related to behavior intention in using online learning platform. Thus, it is hypothesized that:

H3: Attitude has positive and significant relationship with intention.

Perceived ease of use, attitude and intention

Attitude understanding mostly reference from Ajzen and Fishbein (1975) concept that theoretically said that attitude as someone disposition to react with good or bad degree to some object, attitude, people, institution or any certain event. Schiffman and Kanuk (2007) defined attitude as someone's inner feeling that shows whether he likes or dislikes something (e.g. brand, service). Furthermore, it is said that attitude is something that push predisposition to act in a good or bad manner to something.

Pikkarainen et al., (2004) defined attitude as the base of compatibility, which includes, for instance, the preference for self –service, technology and lifestyle. Davis further found attitude was at best a partial mediator of the effect of perceived usefulness on intention to use, and that it added little casual explanatory power to an individual's intention to use a particular Information System. Individuals who believed that using a new technology would lead to more positive outcomes, also tendered to have a more favorable attitude towards them.

Following these findings, in this study, we assume attitude will be positively mediates the relationship between perceived ease of use and behavior intention in using online learning platform. Thus, it is hypothesized that:
H4: There is an indirect relationship between perceived ease of use, attitude and intention.

Methodology

Survey questionnaire was designed by broadly reviewing literatures in order to identify scales used in the previous studies which are having high reliability and validity. A five-point Likert scale was used from strongly disagree to strongly agree. Online distance learning students in Klang Valley who are currently studying in any online distance learning institution were the main respondents. From 450 questionnaires distributed, 338 were returned. This constitute 75.11% response rate and it is sufficient to analyze the data by using SEM analysis. From the 338 questionnaires returned, there were 319 are completed. After the filtering and removal of the outliers, there were 305 questionnaires were ready to be analyzed. To study the relationships among the main constructs by using the partial least squares (PLS) technique, SmartPLS 2.0 (Ringle et al., 2005) was adopted to assess the measurement and structural model. PLS analysis was chosen because it can evaluate all paths at the same time. (Gefen et al., 2000) and does not need a large sample size (Gefen and Straub, 2005).

Data Analysis

Measurement Model

Figure 1 shows overall results for the hypothesized model. There are significant path coefficients, acceptable R^2 values, and good construct reliability which demonstrate good model fit in PLS (Gefen et al., 2000). The predictability of the model revealed by the R^2 values is another model strength important determinant (Chin, 1998b). For the reliability, composite reliability and average variance extracted (AVE) assessment as shown in Table 1 are the two main measurements utilized in this study. Composite reliability is suggested to be higher than 0.7 (Barclay et al., 1995; Fornell and Bookstein, 1981) and suggested minimum critical value for AVE is 0.5. The composite reliability and AVE values revealed in Table 1 are seemed to attain these requirements. Convergent validity is items in a scale ability to come or load together as a single construct (Chin, 1998a). Discriminant validity indicates how fit individual item factor attaches to its hypothesized construct comparatively to other construct (Kerlinger, 1973). Discriminant validity is approximated via:
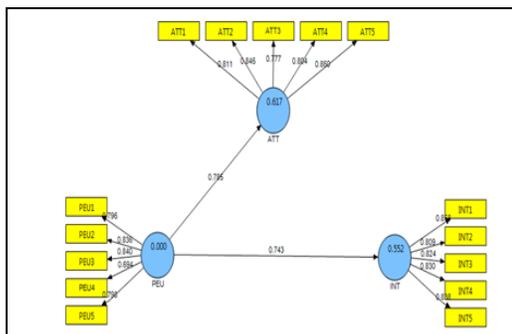
a) cross-loadings; and
b) the relationship between correlations among first-order constructs and the square roots of AVE (Chin, 1998b; Fornell and Bookstein, 1981).

Structural Model

The first model was demonstrated with direct path from perceived ease of use to attitude and perceived ease of use to intention. Both links were significant at T-value higher than 1.96 with the path coefficients of 0.785 and 0.743 respectively. At this point no indirect effect was hypothesized or assessed (Table 3).

Fig 1: Direct Relationship Model	Fig 2: Indirect Relationship Model
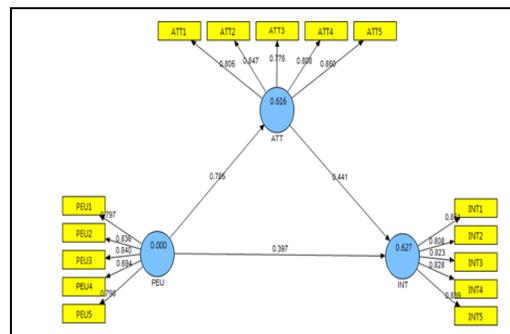
Table 1: Construct Validity and Reliability

	AVE	AVE Square Root	Composite Reliability	R Square	Cronbach Alpha	Communality
ATT	0.672	0.820	0.911	0.616	0.878	0.672
INT	0.692	0.832	0.918	0.627	0.889	0.692
PEU	0.632	0.795	0.895	0.000	0.854	0.632

Then, the second model was presented with attitude take part as a mediating role between perceived ease of use and intention (refer to table 4). The two different models were prepared based on Baron and Kenny (1986) four-step technique to evaluate the mediating effect. The two models had:

1) a direct path from perceived ease of use to attitude
2) a direct path from perceived ease of use to intention
3) a direct path from attitude to intention
4) a direct path from perceived ease of use to intention and an indirect path from perceived ease
   of use to attitude and then from attitude to intention.

Mediation is said to be present when the direct path coefficient between the independent variable and dependent variable is declines when the indirect path through the mediator is created in the model. The direct path is evaluated without the involvement of mediator and with the involvement of mediator. The direct path standardized beta was 0.743 and change to 0.397 after the introduction of attitude as a mediator. The amount of the decrease of the relationship between perceived ease of use and intention accounted by the mediator was 0.346 which represent 46.57% of the direct effect. The significance of mediation effect was measured by using Sobel test with the application of bootstrapping technique where the specific model in question with both direct and indirect paths included and execute N bootstrap re-sampling and explicitly compute the product of direct paths that form the indirect path being assessed. Then, the significance of the mediating effect can be ascertained by observing the betas and standard errors of perceived ease of use to attitude and attitude to intention. Beta of perceived ease of use to attitude is 0.785 with the standard error of 0.028 and beta of attitude to intention is 0.441 with the standard error of 0.062. Using the Sobel test calculator, the Sobel test statistics were calculated by using the betas and standard errors and the result shows that the Sobel test statistics was 6.8601 and significant at 0.00 (two tailed). This shows that attitude partially mediate the relationship between perceived ease of use and intention. Therefore, all the hypotheses are supported (Table 5).

Table 2: Variable Correlation Matrix based on AVE Square Root

	ATT	INT	PEU
ATT	**0.820**		
INT	0.753	**0.832**	
PEU	0.785	0.743	**0.795**

Table 3: Direct Path Coefficient

	Beta	T-Value
PEU -->ATT	0.785	27.601
PEU -->INT	0.743	24.475

Table 4: Indirect Path Coefficient

	Beta	T-Value
PEU -->ATT	0.785	27.276
PEU -->INT	0.397	6.417
ATT -->TRU	0.441	6.746

Table 5: Hypotheses Result

Hypothesizes Relationship	Path Coefficient	T-value	Conclusion

H1	Perceived ease of use has positive and significant relationship with attitude.	0.785	27.276	Supported
H2	Perceived ease of use has positive and significant relationship with intention.	0.397	6.417	Supported
H3	Attitude has positive and significant relationship with intention.	0.441	6.746	Supported
		Sobel Test	**p-value**	**Conclusion**
H4	There is an indirect relationship between perceived ease of use, attitude and intention.	6.8601	0.00	Supported

Discussion and Conclusion

The aim of this study is to develop the mediating effect understanding of attitude on perceived ease of use and students' intention to use online learning platform relationship in Malaysia online distance learning institutions. This study is to establish the causal relationship among perceived ease of use, attitude and intention variables. With reference to this, a review on past studies in the field of perceived ease of use, attitude and intention was done. From the academic studies early findings, the model was developed and it was revealed that perceived ease of use has a positive and significant direct effect on attitude. The same model also revealed that perceived ease of use has a positive and significant direct effect on intention. After that the mediating relationship was brought in the model where attitude was put in place as mediator in the relationship of perceived ease of use and intention. From theoretical point of view, it is difficult to confirm the strength of any model and therefore an empirical testing was done. The proposed model of this study to empirically to examine and validate that the direct relationship among perceived ease of use, attitude and intention are positive. To attain this objective, this study adopted PLS technique data analysis. To begin with, the most accepted relationship between perceived ease of use and intention is validated. The direct relationship path coefficient between the perceived ease of use and attitude is 0.785 and is significant. Then, the most accepted theory that connects perceived ease of use and intention also strongly supported with the direct relationship path coefficient between perceived ease of use and intention is 0.743 and is significant. Then, this study analyzes the mediating effect of attitude on perceived ease of use and intention relationship. The strength of the relationship between perceived ease of use and intention accounted by the mediator was (0.743-0.397) = 0.346, which equal to 46.57% of direct effect. Therefore, there is evidence that attitude is partially mediates the relationship between perceived ease of use and intention and it also shows that attitude as mediator has mediating influence on perceived ease of use and intention relationship in Malaysian online distance learning institutions. This finding enables ODL institutions to come out with high quality online learning platform to ensure their students benefit from it.

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