THE ACCEPTANCE OF eTPP REPORTING SYSTEM BY USING TAM MODEL

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Abstract

Technological innovations are significant in human and professional life. A new online correction and prevention system called eTPP to replace old traditional system has introduced new major changes in the reporting process. Therefore, this study was carried out to determine the level of user's acceptance towards eTPP and to investigate the factors that influence user's behavioural intentions to use eTPP in UiTM Cawangan Johor, Kampus Segamat. A Technology Acceptance Model (TAM) was employed as a conceptual framework to investigate the factors that influence users' acceptance to use eTPP. To test the model, data were collected from 44 respondents from various departments in UiTM Cawangan Johor, Kampus Segamat. Questionnaires were distributed to collect primary data from the respondents about their acceptability of eTPP. The results were presented through multiple regression analysis and supported by mediating analysis (Preacher and Hayes, 2008; Baron and Kenny, 1986), whereby it showed consistent mediating result with the regression result. The overall finding of the study showed that the perceived ease of use was the main factor influencing eTPP acceptance among the users.

Introduction

Increase in the Internet usage along with the advancement of technology marks a new era of technologies. Better infrastructure and growth of facilities have resulted in more varieties of internet services and reporting practices. All these can be seen widely across all over the world today including Malaysia. Based on the statistical data extracted from www.internetlivestats.com, the number of internet users in Malaysia already reached around 20,183,848 from out of total 29,901,997 Malaysian populations in the year 2014. Thus, this indicates that there were 67.5% of Internet users in Malaysian in the year 2014. This number of Internet usage continued to grow in the year 2015 with 0.5% rate to 68% from 20,637,217 over 30,331,007 out of the total population. This figure is expected to continue to grow in year 2016 and so on.

Table 1.1 Malaysia Internet Usage Rate between Years 2000 till Year 2015

Year	Users	Penetration (% of Population)	Total Population
2015	20,637,217	68 %	30,331,007
2014	20,183,848	67.5 %	29,901,997
2013	19,732,960	67 %	29,465,372

With this growth, everything has started to migrate and today, people prefer to use the online system rather than manual or traditional methods (paper based system – fill up the form) due to some reasons. For example, the costs of printing and mailing can be reduced by using the online system. This means that people can eliminate the hassle of putting the invoice into the envelope and queuing for the stamp before mailing it to the customers.

Table 1.2: Malaysia Non-Users Internetless Rate and Changes from Years 2000 till 2015

Year	Non-Users (Internetless)	1Y User Change	1Y User Change	Population Change
2015	9,693,790	2.2 %	453,369	1.43 %
2014	9,718,149	2.3 %	450,888	1.48 %
2013	9,732,412	3.3 %	636,523	1.53 %

In terms of security, the online system is deemed to be more secure where a feature such as the login module can be included for user to enter the system. This allows the control of having only people with authorisation to access the system. On the other hand, the data is also stored in single data storage and this makes it easy for the data backup process. These reasons show that there is a need for people to move from paper-based system to modern web system.

UiTM's Johor Campus in Segamat also takes part in the migration. The introduction of a new online system called *eTPP* aims to replace the old paper-based system to speed up the reporting process relating to corrective and prevention activities. Cases taken place under the committee's scope will be reported to the system by all authorised 44 users. In general, this system can be divided into two main users; admin and reporting staff (PMA). For the reporting staff (PMA), they need to fill in the complainant's information which comprises various types of complaints (prevention, correction and enhancement), problems involved, risk level, actions to solve, date accepted tasks, and date to be settled. Once the reports are submitted, the log report needs to be approved by the staff's superior officer. This log report also can be accessed by the administrator to ensure all cases are solved within the expected time for monitoring purposes. The reports are represented in graphs with colourful indicators to help the administrator monitor each case efficiently. Thus, the objective of this research is to examine the level of acceptance of the *eTPP* system by employing technology acceptance model (TAM) as a framework.

Literature review

Technology Acceptance Model (TAM)

Over the last two decades, there have been a lot of techniques on assessing learner to study the level of users' acceptance towards technology adoption in information technology field. Of all the theories introduced, Technology Acceptance Model - TAM is the common selection. Introduced by Davis (1989), TAM is used to examine the impact of external variable towards the behavioural intention whenever people use the new system, because it explains the casual links between belief - the usefulness and ease of use of the system towards their attitude, intentions, and the actual usage of the system (Davis, 1986). The adaption model is illustrated in Figure 2.1.

Perceived Usefulness (PU)

Perceived usefulness is one of the familiar variables used among TAM researchers. Davis (1989) defined perceived usefulness as the extent to which a person believes that using a particular system facilitates their activity. It means that by using a specific application system, it would enhance his or her job performance. Moreover, perceived usefulness is the strongest and most significant determinant of the student's intention towards using e-learning in Sumak et al. (2011). The relationship between

perceived usefulness and behavioural intention has been widely acknowledged by the previous study in Cheng et al. (2006). In addition, Davis (1989) also revealed that perceived usefulness is a key factor in the intention to use web system applications.

Perceived Ease of Use (PEOU)

Davis (1989) claimed that perceived ease of use as the extent to which a person believes that using the system is easy or expects the target system to be free of effort. It means that if a person uses the technology, he or she needs less effort to do the job as compared to performing manual task. In the case of perceived usefulness, perceived ease of use has been found to have a positive effect on intention to use as shown in Lean et al., (2010) and Sumak et al., (2011).

Behavioural Intention (BI)

Behavioural intention is defined in Sumak et al. (2011) as the extent to which a person has realised his or her plans to perform or not to perform a specified future behaviour. According to Lean et al. (2010), behavioural intention is a measure of the strength of one's intention to perform a specified behaviour as his or her desire. The same result is also demonstrated in Sumak et al. (2011), where the students' intentions to use the system are reflected by their understanding on how easy the system is, as one of the individual's indicators of the readiness to perform a given behaviour.
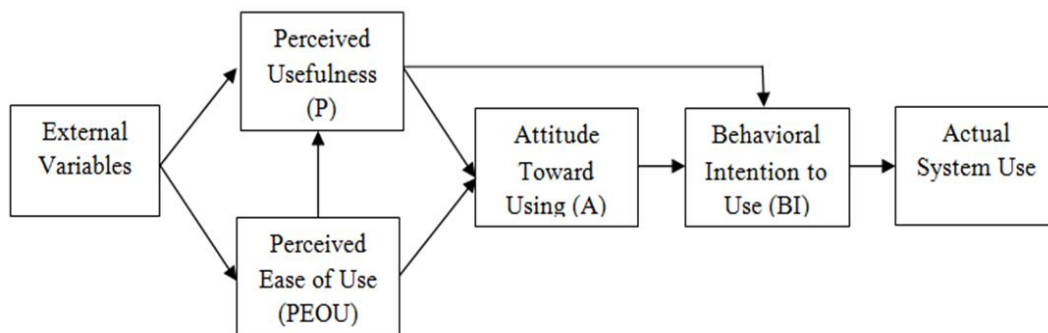

Figure 2.1: Technology Acceptance Model, originally developed by Davis, 1989

To fulfil the research hypothesis, TAM model as Figure 2.1 is modified as illustrated in Figure 2.2 and the proposed theoretical framework is divided into three (3) separated models which can be referred in Figures 2.2a, 2.2b, and 2.2c.
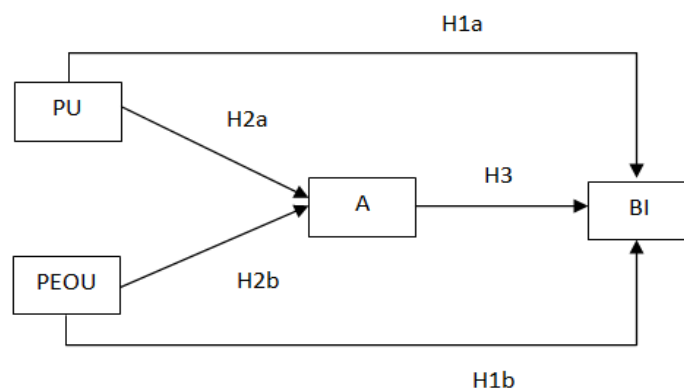

Figure 2.2: The Proposed Theoretical Framework adapted from Davis, 2009
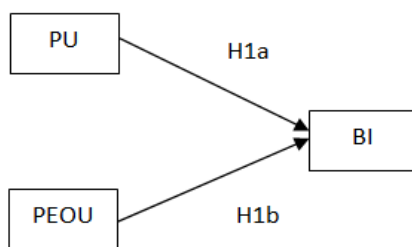
Figure 2.2a: Perceived Usefulness and Perceived Ease of Use on Behavioural Intention

Perceived Usefulness and Perceived Ease of Use (PEOU) and Behavioural   Intention (BI)

Figure 2.2a illustrates the relationship between perceived usefulness and perceived ease of use with corresponding behavioural intention. The independent variable is the items in perceived usefulness and perceived ease of use, while the dependent variable is the item in behavioural intention.

According to Davis (1989), perceived usefulness is the most important predictor of behavioural intention. As stated in Bahry et al. (2012), perceived usefulness is one of the human behaviours in contributing to behavioural intention on most online system such web portal. Many researchers found that perceived usefulness has a positive effect towards behavioural intention as mentioned clearly in Davis (1989) and Sumak et al. (2011).

As for perceived ease of use, there are some studies which also show a positive effect towards behavioural intention. It is clearly stated in Sumak et al. (2011), where perceived ease of use has a positive effect on e-learning system usage intention known as Moodle.

In 2010, Lean et al. (2010) conducted a study on factors influencing the intention to use e-government services among citizen in Malaysia. They found that both perceived usefulness and perceived ease of use had a positive relationship towards the citizen's intention in using e-government services.
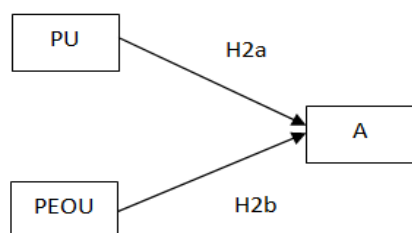

Figure 2.2b: Perceived Usefulness and Perceived Ease of Use on Attitude

Figure 2.2b was constructed to validate each relationship between perceived usefulness and perceived ease of use corresponding to the attitude towards using. The independent variable is the items in perceived usefulness and perceived ease of use, while the dependent variable is the items in attitude towards using section, in which attitude towards using will be the mediating variable.

According to Davis (1993), attitude towards using is the extended evaluation effect of an individual, whenever his or she applied the information system on a daily task. In other words, it is the level of thrust which can drive user to continuously use the system.

A study conducted by Lee (2010) found that perceived usefulness is positively related to the attitude towards using. The positive effect between perceived usefulness and attitude towards using is also in

line with different studies (Sumak et al., 2011; Ngai et al., 2007).

As for perceived ease of use, the positive effect of the relationship between perceived ease of use and attitude towards using can be found in Ngai et al (2007);Lee(2010), and Sumak et al., (2011).

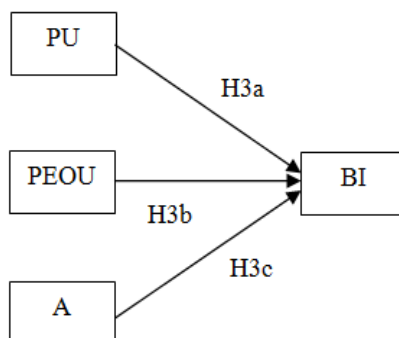**Attitude towards Using (A) and Behavioural Intention (BI)**

Figure 2.2c: Perceived Usefulness, Perceived Ease of Use and Attitude towards Behavioural Intention

These constructed frameworks are used to validate the relationship between perceived usefulness, perceived ease of use, and attitude towards using correspondents towards behavioural intention.

Intention to use a certain system can be referred to the user's feelings whenever they used the system as stated in Sumak et al. (2011). If the users are disagreeable about the system /or do not like to use the system, the system should be reshuffled or replaced with a new one.

Liu et al. (2009) indicated that there is positively a significant relationship between attitudes towards using upon the intention to use the technology. However, this result can be negative as stated in recent research result by Sumak et al. (2011), showing that attitude towards using also can have a negative effect on the student's intention to use.

Hypotheses Development

Based on the related Literature Review, the hypotheses tested in this study are constructed as below:

Hypotheses

Hypothesis 1a
Perceived usefulness has significant effect towards behavioural intention

Hypothesis 1b
Perceived ease of use has significant effect towards behavioural intention.

Hypothesis 2a
Perceived usefulness has significant effect towards attitude towards using.

Hypothesis 2b
Perceived ease of use has significant effect towards attitude towards using.

Hypothesis 3a
Perceived usefulness has significant effect towards behavioural intention.

Hypothesis 3b
Perceived ease of use has significant effect towards behavioural intention.

Hypothesis 3c
Perceived usefulness, Perceived ease of use, attitude towards using have significant effect towards behavioural intention.

Methods

Research Instrument

This study was constructed based on primary data which the data was collected via self-administered questionnaire. A questionnaire consisted of 29 closed-ended questions was used in the data collection process. The questionnaire is divided into several sections and each section represents the variables of the study. The scales used for the answer is Category Scale for obtaining personal data and also Likert Scale (ranging from; 1 =" Strongly Agree" to 5 = "Strongly Disagree") for other questions. The piloting questionnaires were piloted to a group of ten (10) admin staff randomly to assess its validity. Then the questionnaire was revised and checked, to attest it for free from any errors before being distributed out to target respondents.

Respondent & Data Collection

The objective of the study is to examine the level of acceptance towards *eTPP* system. The population for this study consisted of all 44 TPP committee members in UiTM's Segamat Campus in Johor. All 44 questionnaires were distributed to person-in-charged for each unit. The respondents had been given sufficient time to fill up the questionnaire. The survey also aimed to test the hypotheses as stated later in further sections.

Statistical Data Analysis
To analyse the data, Statistical Package Software System (SPSS) ver.21 was used. Results were presented through descriptive statistics, correlation analysis, multiple regression analysis, and also bootstrapping test. The causal links and relationships between these variables will be used to construct and validate the seven (7) hypotheses in three (3) separated proposed models.

In order to solve the missing data /or blank responses, the "hot deck imputation" method will be used. Hot deck imputation method was chosen because of its suitability to handle small scale data which is supported by Lohr (2011), whereby the missing values are filled in to create a complete data set that can be analysed with traditional analysis methods. This is due to a number of respondents who did not complete the questionnaire such as not answering the questions, failing to understand the questions, and giving wrong input towards the questions.

Result and Discussion

Response Rate

In this study, 42 out of 44 distributed questionnaires were returned, which represented a response rate of 95.45% from the original sample. However, among those returned questionnaire, only 37 questionnaires were used as five (5) responses were invalid and hence discarded from the data analysis.

Reliability Analysis

Table 5.1 shows the reliability results for all the measurements. There were substantial variation Cronbach's Alpha values for all variables ranging from .536 to .878. According to Nunally and Bernstein (1994), Cronbach's alpha values greater than .70 are generally considered desired or adequate. Thus, this shows that out of four (4), only three (3) variables in this study met the threshold of the analysis. This suggests that the measurements of Perceived Usefulness, Perceived Ease of Use, and Behavioral Intention were acceptable, valid and reliable.

Table 5.1: Reliability Statistics

Variable	Cronbach's Alpha	N of Items	N of Deleted Items
PU	.855	4	–
PEOU	.797	5	–
A	.536	5	–
BI	.878	7	–

Yet, one (1) measurement used in this study scored less than .70. This implies that the measurement used, Attitude, was sufficient or acceptably valid. This is supported by Schmitt (1996) as for Cronbach's Alpha, there was no sacred level of acceptance or unacceptable and in some cases low levels of alpha were still considered as reasonably acceptable.

Correlation Analysis

Table 5.2: Pearson Correlation Analysis

Variable		PU	PEOU	A	BI
PU	Pearson Correlation	1	.745**	-.072	.433**
	Sig. (2-tailed)		.000	.672	.007
PEOU	Pearson Correlation	.745**	1	-.253	.555**
	Sig. (2-tailed)	.000		.131	.000
A	Pearson Correlation	-.072	-.253	1	-.288
	Sig. (2-tailed)	.672	.131		.084
BI	Pearson Correlation	.433**	.555**	-.288	1
	Sig. (2-tailed)	.007	.000	.084	

**. Correlation is significant at the 0.01 level (2-tailed).

Result of the Pearson's correlations between all variables is illustrated in Table 5.2. All tested variables were positively and significantly correlated between variables ($p < .01$) except for Attitude towards Using, which was not significantly correlated with others variable. This shows the weak association between Attitude and other variables.

Regression Analysis

Regression analysis in this study are divided into three (3) steps based on three (3) separated models. This includes the mediating analysis that needs to be tested to confirm the relationship between all tested independent variables and mediating variable towards dependent variable.

First Model

For the first model, regression analysis examines the relationship between Perceived Usefulness and Perceived Ease of Use on Behavioural Intention.

Table 5.3a: First Model Summary

Model	R	R Square	Adj. R Square	Std. Error
1	.556[a]	.309	.268	.46334

The results of the regression analysis indicate that the predictor explained .268 of the variance. As shown in Table 5.3b, it shows that there is no significant relationship between Perceived Usefulness and Behavioural Intention (β = .041, p >.05). Therefore, hypothesis 1a is not supported. Yet, Perceived Ease of Use significant has a significant relationship on Behavioural Intention (β = .651, p <.05). This result thereupon suggests that hypothesis 1b receives strong support, which theorised that there is a significant relationship between Perceived Ease of Use on Behavioural Intention.

Table 5.3b: First Model Coefficients

Model	Independent Variable	B	Std. Error	β	T	Sig.
	(Constant)	1.018	.375		2.716	.010
1	PU	.041	.201	.043	.203	.841
	PEOU	.651	.266	.523	2.445	.020

Second Model

Second Regression model measure the relationship of Perceived Usefulness and Perceived Ease of Use towards Attitude.

Table 5.4a: Second Model Summary

Model	R	R Square	Adj. R Square	Std. Error
2	.307[a]	.094	.041	.38164

Hypotheses 2a and 2b stated that Perceived Usefulness and Perceived Ease of Use would have a significant relationship on Attitude, respectively. The result as in Table 5.4a shows that the two (2) predictors explained .041 of the variance. Table 5.4b suggests that there is no significant relationship that exists of both variables, Perceived Usefulness (β = .177, p >.05) and Perceived Ease of Use (β = -.402, p > .05) on Attitude. Thus, these two (2) hypotheses 2a and 2b are not supported.

Table 5.4b: Second Model Coefficients

Model	Independent Variable	B	Std. Error	β	t	Sig.
2	(Constant)	3.951	.309		12.803	.000
	PU	.177	.166	.262	1.070	.292
	PEOU	-.402	.219	-.448	-1.830	.076

Third Model

Third regression model examines the relationship between Perceived Usefulness and Perceived Ease of Use as independent variables and Attitude as the mediating variable towards Behavioural Intention.

Table 5.5a: Second Model Summary

Model	R	R Square	Adj. R Square	Std. Error
3	.578[a]	.335	.274	.46150

Evidently, all variables including mediating variable exhibit no significant relationship on Behavioural Intention with an adjusted R Square of .274. The mediating variable, which is Attitude (β = .557, p > .05) was found not to have significant relationship on Behavioural Intention in this Regression model. Furthermore, for independent variables it also shows that there are no relationships towards Behavioural Intention. It can be further illustrated in Table 5.5b. Thus, all the hypotheses made on the third model are not supported since there is no significant effect on the dependent variable.

Table 5.5b: Third Model Coefficients

Model	Independent Variable	B	Std. Error	β	t	Sig.
3	(Constant)	1.942	.900		2.157	.038
	PU	-.234	.207	-.168	-1.128	.268
	PEOU	.082	.204	.087	.404	.689
	A	.557	.278	.447	2.005	.053

By examining the three (3) regression models, it is implied that, Attitude had no mediating effect on the relationship between Perceived Usefulness and Perceived Ease of Use towards Behavioural Intention. This is because as shown in third regression model, there is no relationship between independent variables and mediating variable towards dependent variable.

Mediating Analysis

Preacher and Hayes (2008) suggested that bootstrapping test must be performed to confirm the result of mediating analysis of Baron and Kenny (1986). The bootstrapping analysis showed Attitude was confirm not mediated the relationship between Perception towards BI (Indirect effect = 0.0174) and also Perceived Ease of Use towards Behavioural Intention (Indirect effect = 0.0496). this is because the results of bootstrapping test revealed that, the 95% confidence interval for both types of indirect effect include zero (P → A → BI: (-0.0421, 0.1742); PEOU → A → BI: (-0.0122, 0.2695).

Table 5.6: Bootstrapping Test for Indirect Effect using PROCESS Analysis

| Indirect Path	Indirect Effect	95% CI BCa, Bootstrap
PU → A → BI	0.0174	(-0.0421, 0.1742)
PEOU → A → BI:	0.0496	(-0.0122, 0.2695)

Note: PU = Perceived Usefulness; A = Attitude; PEOU = Perceived Ease of Use; BI = Behavioural Intention; BCa = Bias Corrected Bootstrap; Number of Bootstrap Resamples was 5000; p <.05 .

The bootstrapping test results above also yield similar results with the theory of Baron and Kenny (1986). As referring to Table 5.4b, both independent variables (i.e. Perceived Usefulness and Perceived Ease of Use) were not giving a significant effect toward the mediating variable (i.e. Attitude). Therefore, it is opposite to the assumption of the mediating analysis based on the theory of Baron and Kenny (1986), because the main component of the mediating analysis is that the independent variable should have a significant effect towards mediating variable (Preacher and Hayes, 2008; Zhao et al., 2010).

Besides that, by examining the regression analysis in Table 5.5b, all variables; independent variables and mediating variable also did not give the significant effect on dependent variable. Hence, it confirms the effect of Attitude did not give any significant effect toward Behavioural Intention. Based on this finding, it can be concluded that, the results of bootstrap indirect effect using the analysis of Bias Corrected Bootstrap is well satisfied. Thus, it can be said Attitude totally did not give a mediating effect towards the relationship of Perceived Usefulness, Perceived Ease of Use and Behavioural Intention.

Figure 5.1a & b shows the summary of path analysis based on the Baron and Kenny (1986) mediating analysis.

Model Step 1
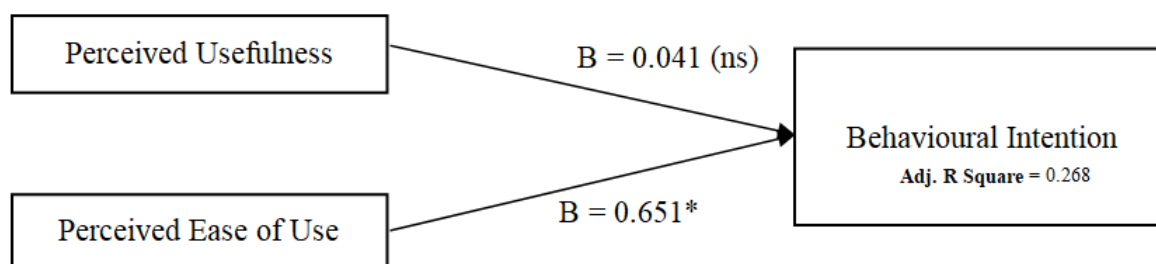
Figure 5.1a: Path Analysis

Model Step 2 and Step 3
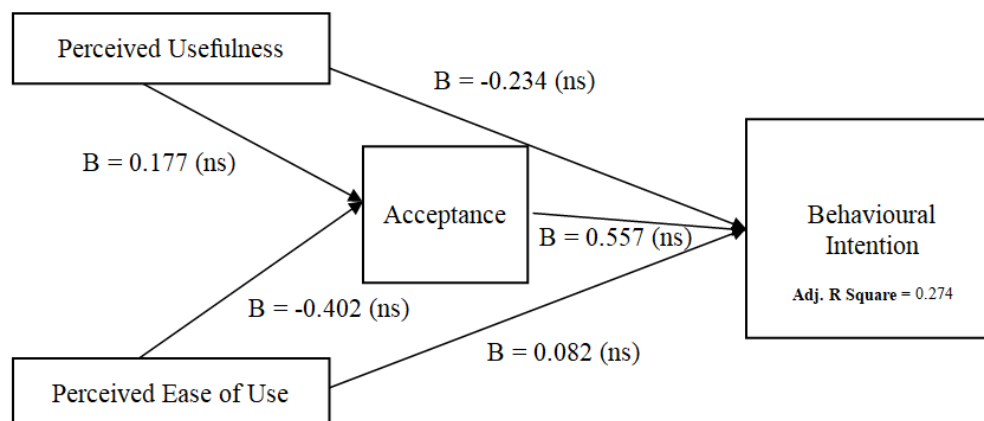
Figure 5.1b: Path Analysis

Conclusion

This study is conducted to investigate, the factors that influence the behavioural intention among users and also to examine the level of the acceptance towards using the online system. The proposed theoretical framework is adapted from original TAM model that developed by Davis (1989), which the attitude act as mediating factor that influence perceived usefulness and perceived ease of use over behavioural intention. Table 6.1, summarized the hypotheses result of the study for both perceived usefulness and perceived ease of use on behavioural intention. Based on the analysis result, it is clearly seen that perceived ease of use is the most significant predictor in behavioural intention for users to use the e-TPP system at .020 significant rates similar to result capture in study done by Gao et al. (2012) and Ariff et al. (2013).

Table 6.1: Hypothesis Testing Result

Hypothesis	Effect	Sig.	Coefficient	Remarks
H1a	PU → BI	.841	0.41	Not Significant
H1b	PEOU → BI	.020	0.651[**]	Significant

*Notes: ** p<0.05; *** p<0.01; NS p>0.05*

However, for perceived usefulness, it didn't show a significant relationship of users to use the system. This is supported by the analysis result done in the study, which shown the significant value only at .841. This might due to the age and gender factors among users, where majority of the participants are female and their age are above 40 years old. To support this theory as found in, Tarhini et al. (2014) in their study on e-learning acceptance, age are having a strong relationship between perceived usefulness and behavioural intention for younger users compared to older users due to old users may have less confident to use technology.

As for perceived ease of use and behavioural intention, the result contradicts with previous study, where older users are having stronger relationship moderately than younger users tally to this research result. That means users feel this system is easy for them to use and apply in their daily work. Meanwhile, Gender factor, somehow might also contribute to the negative result of perceived ease of use on behavioural intention. This supported by previous study done by Hu et al. (2010), stated that male workers in the Arabian region accept technology system more than female. However, this contrast to the study done by Wang et al. (2009) and Tarhini et al. (2014), which showed there are no big moderating effect of gender towards e-learning usage.

As a matter of fact, the findings of this study suggest that the developers of this eTPP system should carefully consider the requirements and values of potential users and ensure that the systems meet the user's expectation. With the knowledge from this study, it will enable system developers to use this as additional source of information to re-design and re-develop a better system that can enhance this eTPP system. This surely will benefit the university itself as it can help the system to be accepted across university and serve as a main platform in managing risks more efficient and effective.

Acknowledgement

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