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# The Mediating Effect of Perceived Usefulness towards Tax Service Quality and the Continuance Usage Intention of the E-Filing System in Malaysia

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**Abstract**: This study examines the mediating effect of perceived usefulness on the relationship between tax service quality (correctness, response time, system support) and continuance usage intention of e-filing system in Malaysia. A total of 116 data was analysed using Partial Least Squared Method (PLS). The result showed that Perceived Usefulness has a partial mediating effect on the relationship between tax service quality (Correctness, Response Time) with the continuance usage intention and tax service quality (correctness) has significant positive relationship with continuance usage intention. Perceived usefulness was found to be the most important predictor of continuance usage intention.

Keywords: Tax service quality, perceived usefulness, continuance usage intention, e-filing system

# 1. INTRODUCTION

E-government services have increasingly been adopted since the early 21st century. E-government represents a fundamental change in the whole public sector structure, values, culture and the ways conducting business by utilizing the potential of ICT as a tool in the government agency (Alshehri, Drew & Alfarraj, 2012). Today, similar to e-Commerce, citizens' adoption of e-Government services has moved to the post-adoption stage (Tran, Tan, Mills and Wang, 2014). The use of these services after the initial adoption are subject to changes based on usage experiences (Venkatesh, Thong, Chan, Hu & Brown, 2011), which may potentially increase or decrease (Reddick, 2004) Therefore, an understanding of what factors affect citizen's continuous usage intention plays a vital role in e-Government development.

The use of information technology has given a new perspective to the development and integration of Malaysia's tax administration system. Tax administrators understanding of the e-filing system will improve the level of service provided and encourage the users of the system to continuously use it which will lead to the increase in revenue generation (Mustapha & Obid, 2015). E-filing system as a whole integrates tax preparation, tax filing and

tax payment, which serves as a major advantage over traditional manual procedure (Ambali, 2009). Since its introduction in 2006, e-filing has evolved each year in order to provide better service to the taxpayers. The online tax system makes an effective impact on the economic towards improving the level of income generation and tax compliance by the tax payers. This could be due to benefits provided by e-filing system such as convenience, time saving, cost effectiveness for both the tax administrator and tax payers (Mustapha & Obid, 2015). Therefore, this study examined the impact of perceived usefulness in mediating the relationship between tax service quality and e-filing continuance usage intention.

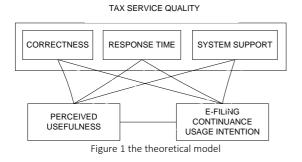
The research questions of this study are (1) Do perceived usefulness significantly influences the continuance usage of the e-filing system; (2) Is there a mediating effect of perceived usefulness on the relationship between tax service quality and continuance usage of e-filing system; (3) What is the influence of tax service quality on the continuance usage intention? These questions were answered with the objectives of this study which are (1) to examine the significant relationship between perceived usefulness and continuance usage intention of e-filing system, (2) to examine the mediating effect of perceived usefulness on the

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relationship between tax service quality and continuance usage intention of e-filing system, (3) to examine the relationship between tax service quality and continuance usage intention of e-filing system. Figure 1 below represents the theoretical model.



## 2.0 Literature Review

# 2.1 Tax Service Quality

Service quality is defined as the degree to which the service is delivered to best address customer needs in terms of the support of the entity managing the system (DeLone & McLean, 2003), in the case of this context, the e-filing system. Parasuraman and Malhotra (1999) claimed that to encourage repeat purchase and to build customer loyalty, firms need to focus on the customers' perception and evaluation on the e-service quality. Hughes and Moizer (2014) found that tax service quality is a function of brand name and reputation. Conversely, Mustapha and Obid (2014) claimed that tax service quality which includes reliability, responsiveness and informativeness are important determinants of usage of online tax system.

Further, Christensen's (1992) finding suggest that taxpayers satisfaction with tax services is not based on the way the service is delivered but more on the form of advice or a completed tax returns. Barnes and Vigden (2002) explains that service quality such as reliability, responsiveness, assurance and empathy is expected by users in every service encounter and it is important in achieving egovernment success (Hseih, Huang, & Yen, 2013). Tax service quality was also found to influence the efficiency in tax collection which effects the taxpayers' satisfaction and their compliance behaviour (Boonyarat, Sofian & Wadeecharoen, 2014).

As such, in this study, the tax service quality component factors such as responsiveness (response time), system support and reliability (correctness) will be evaluated to determine their impact on the continuance usage intention of the e-filing system.

Response Time means the system responds to requests within a short and acceptable time period. It is also defined as the elapsed time between a user-initiated request for service or action and the reply to the request (Bailey & Pearson, 1983). Previous researchers have identified response time as a measure of system quality (Chien & Tsaur, 2007; Lee & Koza, 2006). System Support is defined as the mechanical and tailored support to access the needed information without problems. It includes help desks, online support services, customized support and other facilities (Cho, Cheng & Lai, 2009). The quality of system support received by users from a particular department is perceived to be related to service quality (Chan & Sin, 2010). Correctness is defined as the assurance that the system works properly and produces correct output. Bailey and Pearson (1983) defined accuracy as the correctness of the output information. Mustapha and Obid (2015) argued that in evaluating the service quality of a system, the ability of the system to function accurately and appropriately is very important.

## 2.2 Continuance Usage Intention

Continuance intention is defined as ones intention to continue using a service in the post acceptance stage. It is similar to ones repurchase decision as both decisions are influenced by initial usage (Bhattacherjee, 2001). Research on continuance usage intention have been examined both at the organizational and individual level of analysis (Limayem, Hirt & Cheung, 2007), the individual level of analysis assumes that IS continuance behaviour is the continued usage of IS by adopters, which is follows an initial acceptance decision (Kim, Chan & Chan, 2007). However, unlike initial acceptance decision, IS continuance depends on various factors that affect the individuals' decision to continually using a particular system (Limayem, Hirt & Chin, 2001).

## 2.3 Perceived Usefulness

Perceived usefulness was defined "as the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context (Davis, Bagozzi & Warshaw, 1989). Perceived usefulness is correlated with all technology usage. Yang and Fang (2004) claimed that since consumers' use of Internet-based services are similar to the



adoption of new technology, thus usefulness is an important factors in evaluating online service quality. Perceived usefulness was also found to be one of the main important dimensions in the evaluation of a quality of an e-service by consumers (Carlson & O'Cass, 2010). Studies also have found that perceived usefulness has a significant mediating effect in technology adoption. Belkhamza and Wafa (2009) found that perceived usefulness significantly mediates the relationship between system risk and intention to use e-commerce. Likewise, Xia and Bechwati (2008) also found that perceived usefulness significantly mediates the relationship between personalization and purchase intentions

As such, this present study adapts perceived usefulness to mediate the relationships that exist between continuance usage intention of an e-filing system and tax service quality. The hypotheses developed are based on the study model.

- H1a: There is a direct positive relationship between correctness and continuance usage
- H1b: There is a direct positive relationship between response time and continuance usage intention
- H1c: There is a direct positive relationship between system support and continuance usage intention
- H2a: There is a direct positive relationship between correctness and perceived usefulness
- H2b: There is a direct positive relationship between response time and perceive Usefulness
- H2c: There is a direct positive relationship between system support and perceived usefulness
- H3: There is a direct positive relationship between perceived usefulness and continuance usage intention
- H4a: There is a significant mediating effect of perceived usefulness on the relationship between correctness and continuance usage intention
- H4b: There is a significant mediating effect of perceived usefulness on the relationship between response time and continuance usage intention
- H4c: There is a significant mediating effect of perceived usefulness on the relationship between system support and continuance usage intention

## 3.0 Methodology

## 3.1 Data Collection Method

Non-probability purposive sampling method was adapted in this study. A total of 330 questionnaires were distributed among the taxpayers in Penang, Malaysia using self-administered questionnaire. A total of 130 questionnaires were returned and out of it, 116 were completed whereas the other 14 were incomplete. As such, the response rate was 35.1%. The questionnaire consisted of 5 sections. The first section elicited the screening question, the second section collected the demographic data, the third section extracted information on tax service quality dimensions, section four measured the perceived usefulness, and last section measured continuance intention. The sample selected were taxpayers who had used the e-filing system before at least once as the measures required them to express their experience in adopting the system.

## 4.0 Data Analysis

Smart PLS version 3.0, a variance based Structural Equation Modelling (SEM) was used to analyse the hypotheses generated. The two step analytical procedure suggested by Anderson and Gerbing (1988) was adopted to analyse data whereby the measurement model was evaluated first and then followed by the structural model. Also following the suggestion of Chin (1998), the bootstrapping method (500 resample) was done to determine the significant level of loadings, weights and path coefficients. The research model of this study is as below.

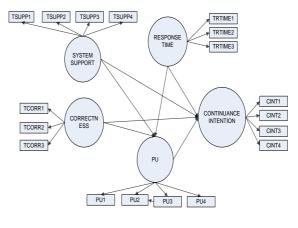


Figure 2: Research Model

# 4.1 Measurement Model

Convergent validity is the degree to which the items that are indicators of a specific construct should converge or share a high proportion of variance in common (Hair, Black, Babin & Anderson, 2010). As can be seen from Table 1, all loadings and AVE are above 0.5 and the composite reliability values are more than 0.7, which is deemed to be acceptable (Hair et al., 2010). Therefore, we can conclude that convergent validity has been established.

Next, we assessed the Discriminant validity which is the extent to which a construct is truly distinct from other constructs (Hair et al., 2010). This can be



established by the low correlations between all the measure of the interest and the measure of other constructs. To address discriminant validity, the square root of the AVE is compared against the correlations of the other constructs, when the AVE extracted is greater than its correlations with all the other constructs then discriminant validity has been established (Fornell & Larcker, 1981) (refer Table 2).

Model Construct         Items         Loadings         AVE         CR           Perceived         PU1         0.923         0.843         0.955           Usefulness         PU2         0.896         0.908         0.908           PU3         0.908         PU4         0.944         0.944           Continuance         CINT1         0.942         0.899         0.973           Intention         CINT2         0.962         0.903         0.973           Correctness         TCORR1         0.893         0.777         0.913           Correctness         TCORR1         0.893         0.777         0.913           TCORR3         0.850              Response Time         TRTIME1         0.910         0.789         0.918           TRTIME2         0.929               System Support         TSUPP1         0.816         0.715         0.909           TSUPP3         0.898	Table 1: Result of the Measurement Model				
Usefulness         PU2         0.896         0.908           PU3         0.908         0.908         0.908           PU4         0.944         0.944         0.944           Continuance         CINT1         0.942         0.899         0.973           Intention         CINT2         0.962         0.896         0.973           Correctness         TCORR1         0.893         0.777         0.913           Correctness         TCORR1         0.893         0.777         0.913           TCORR3         0.850         0.777         0.913           Response Time         TRTIME1         0.910         0.789         0.918           TRTIME2         0.929         0.775         0.909           TRTIME3         0.822         0.791         0.816         0.715         0.909           System Support         TSUPP1         0.816         0.715         0.909           TSUPP3         0.898         0.898         0.791		Items	Loadings	AVE	CR
PU3         0.908           PU4         0.944           Continuance         CINT1         0.942         0.899         0.973           Intention         CINT2         0.962         0.973         0.934           Correctness         TCORR1         0.893         0.777         0.913           Correctness         TCORR1         0.893         0.777         0.913           TCORR3         0.850         0.777         0.918           Response Time         TRTIME1         0.910         0.789         0.918           TRTIME2         0.929         1         0.822         0.909           System Support         TSUPP1         0.816         0.715         0.909           TSUPP2         0.791         0.898         0.915         0.909	Perceived	PU1	0.923	0.843	0.955
PU4         0.944           Continuance         CINT1         0.942         0.899         0.973           Intention         CINT2         0.962         0.000         0.000           Correctness         TCORR1         0.893         0.777         0.913           Correctness         TCORR1         0.893         0.777         0.913           TCORR3         0.850         0.777         0.913           Response Time         TRTIME1         0.910         0.789         0.918           TRTIME2         0.929         0.929         0.715         0.909           TSUPP1         0.816         0.715         0.909           TSUPP2         0.791         0.898         0.715         0.909	Usefulness	PU2	0.896		
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TSUPP3 0.898	System Support	TSUPP1	0.816	0.715	0.909
		TSUPP2	0.791		
TSUPP4 0.874		TSUPP3	0.898		
		TSUPP4	0.874		

Table 2: Discriminant	Validity of Constructs

	Continuance Intention	Correctness	PU	Response Time	System Support
Continuance Intention	0.948				
Correctness	0.687	0.881			
PU	0.711	0.609	0.918		
Response Time	0.589	0.647	0.619	0.888	
System Support	0.502	0.551	0.491	0.711	0.846
Note: Diagonal	Note: Diagonal represents the equare reat of Average Variance Extracted				Extracted

Note: Diagonal represents the square root of Average Variance Extracted (AVE) while the other entries represent squared correlations

# 4.1 Structural Model

The structural model represents the relationship between constructs or latent variables that were hypothesized in the research model. The goodness of the theoretical model is established by the variance explained (R<sup>2</sup>) of the endogenous constructs and the significance of all path estimates (Chin, 2010). Together the  $R^2$  and the path coefficients indicate how well the data support the hypothesized model (Chin, 1998). Figure 3 and Table 3, shows the results of the structural model from the PLS output. Correctness was significantly related towards Continuance intention ( $\beta = 0.362$ , p<0.01) and perceived usefulness ( $\beta = 0.352$ , p<0.01) thus supporting H1a and H2a of this study. Perceived usefulness was found to be statistically significant to continuance intention ( $\beta = 0.435$ , p<0.01), thus supporting H3, response time ( $\beta = 0.365$ , p<0.01) was found in this study to be significantly related to

perceived usefulness, but shows an insignificant effects towards continuance intention hence supporting H2b and rejects H1b. However, system support was found to be insignificantly related to both continuance intention ( $\beta$  = 0.057) and perceived usefulness ( $\beta$  = 0.037), thus rejecting H1c and H2c.

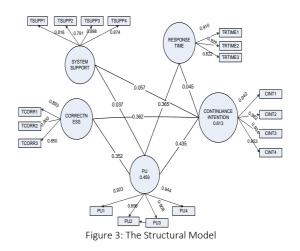


Table 3: Summary of the Structural Model

Path	Path	Std	T- Value
	Coefficient	Error	
Correctness $\rightarrow$	0.362	0.119	3.039***
Continuance Intention			
Correctness→ Perceived	0.352	0.105	3.357***
Usefulness			
Perceived Usefulness $ ightarrow$	0.435	0.100	4.336***
Continuance Intention			
Response Time $\rightarrow$	0.045	0.129	0.350
Continuance Intention			
Response Time $\rightarrow$	0.365	0.110	3.311***
Perceive Usefulness			
System Support $ ightarrow$	0.057	0.084	0.686
Continuance Intention			
System Support $ ightarrow$	0.037	0.093	0.402
Perceived Usefulness			

Note: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1

In verifying the mediating effect of perceived usefulness, Chin (2010) testing method for mediation was followed. To establish the mediation effect, the indirect effect between (a) (independent variable and dependent variable) x (b) (moderator and dependent variable) has to be significant (Helm, Eggert & Garnefeld, 2010). To test for significance, the t-value based on bootstrapping result is calculated (Chin, 2010). If the t-value exceeds 1.64, the hypotheses can be accepted. The result supports the mediating effect of perceived usefulness between correctness and continuance usage intention (t = 3.707) and response time and continuance intention (t = 2.916), which implies that there is a mediation effect of correctness and response time on continuance usage intention via



perceived usefulness, thus supporting hypotheses H4a and H4b. However, system support does not show any significant effect (t = 0.4335), hence rejects H4c.To assess if there is a full or partial mediation, the method suggested by Hair, Hult, Ringle and Sarstedt (2012) based on VAF (Variance Accounted For) was used. The VAF determines the size of the indirect effect towards the total effect. A VAF of 55.12% for correctness and 23.4% for response time was found which indicates that there exist partial mediation effect of perceived usefulness between correctness and response time towards continuance usage intention.

Apart from that, "blindfolding" procedure was also performed to measure the predictive relevance  $(Q^2)$ of the model fit. The  $Q^2$  "represents a measure of how well observed values are reconstructed by the model and its parameter estimates" (Chin, 1998). Models with  $Q^2$  greater than zero imply that the model has predictive relevance. Table 4 shows the result of the blindfolding results. Omission distance of 7 was utilized as Chin (1998) indicates that values between 5 and 10 are feasible.

Table 4: Blindfolding Result				
Block	Cv-Com H <sup>2</sup>	Cv-Red F <sup>2</sup>		
Continuance Intention	0.818	0.548		
Perceived Usefulness	0.725	0.322		

# 5.0 Discussion

The study examines the relationship between the elements of tax service quality (correctness, response time and system support) and perceived usefulness towards continuance usage intention.

The result of this study which reveals a positive and significant relationship between the tax service quality variables; correctness and response time towards perceived usefulness is similar to the previous studies by Yang and Fang (2004), Floropoulos, Spathis, Halvatzis and Tsipouridou (2010) and Carlson and O'Cass (2010). Result of this study also consistence with findings by Brahmasrene and Lee (2012) and Shiau, Huang and Shih (2011) whereby perceived usefulness was found to be positively influence continuance usage intention. Similarly a significant mediating effect of perceived usefulness was found towards the tax service quality variables; correctness and response time and continuance usage intention. This is consistent with the previous studies that also found a significant mediating effect of perceived usefulness, such as Ratna and Mehra (2015), Belkhamza and Wafa (2009) and Money (2004). On the other hand, the

insignificant effect of system support towards perceived usefulness and continuance usage intention may be due to the fact that the support received by the taxpayers will highly influence the satisfaction of the taxpayers and not on the perception of usefulness and continuance usage intention. This has been confirmed in the study by Delone and McLean (2003) claimed that effective system support improves user satisfaction of the system.

The model adopted in this study shows that the perceived usefulness and correctness can explain about 61.3% of the variance in continuance usage intention. These results showed that the model has relatively good predictive power on continuance usage intention. Further, the blindfolding result in Table 4 shows that the CV Comm and CV Red are all above 0 which indicates the model has predictive relevance (Fornell & Cha, 1994).

The implication of the findings can be divided into two; theoretical and practical. Theoretically, this study adds to the growing body of literature that focus on the post adoption environment which is continuance usage intention. It also contributes to the evidence in support for the determinants of continuance usage intention of taxpayers especially in Malaysian context. Practically, since the variables of correctness and response time is found to have a significant direct relationship on perceived usefulness and mediating effect towards e-filing continuance usage intention, the Inland Revenue Board Malaysia (IRBM) needs to pay more attention to boost the tax service quality level to the taxpayers and continuously improve the correctness and response time of the system from time to time to enhance a positive attitude towards the system. In the case of e-filing system in Malaysia, since more than 30% of the taxpayers are using e-filing system, a high service quality approach is deemed to be very important.

# 6.0 Limitation and Suggestion for Future Research

Despite the useful findings of this study, there are several limitations that need to be acknowledged. Firstly, due to time and resource constraint the sample size of the study is only limited to 116 respondents. Secondly, the findings cannot be generalized extensively in Malaysia as the scope of the study is only limited to the taxpayers in Penang only. As such, caution need to be taken when generalizing to the whole country. Lastly, this study only focus on testing the effect of tax service quality variables; correctness, response time and system



support, perceived usefulness and continuance usage intention and does not incorporate the actual usage behaviour in the proposed model.

Therefore, this research can be done further in future by (1) expanding the study to other states in Malaysia, (2) extend the model by incorporating the actual usage behaviour or any other relevant variables such as availability or security of the system, (3) replicate the study to any other e-government services.

## 7.0 CONCLUSION

In this study, it was found that perceived usefulness is an important determinant of continuance usage intention. The result of this study is in line with previous studies such as Li and Shi (2012), Islam (2012). This result implies that a web portal has to provide all necessary and fundamental capabilities to avoid turning away users after their initial usage (Lin, Wu & Tsai, 2005). A local study has indicated that any technological devices provided in

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enhancing the service boundary between the government and its citizen must be found to be useful. Thus, e-filing system must be seen as a better alternative by the taxpayers in submitting their income tax in terms of time, cost and convenience compared to manual submission; failure on this will lead the taxpayers to abandon the system in the long run (Ambali, 2009). Moreover, based on the findings of this study, perceived usefulness partially mediates the relationship between the dimensions of correctness and response time towards e-filing continuance usage intention. This implies that correctness and response time had a direct and indirect influence on taxpayers' continuance usage intention of the efiling system. It appears that the system that works properly and produces correct output and a short and reasonable response time is not only able to determine the usefulness of the e-filing system but also affect their intention to continuously use the system.

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