



Adoption of E-Tax System among Corporate Income Taxpayers' in Nigeria

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Abstract

This paper examined factors affecting the adoption of e-tax system. It introduces “system affordability” as variables that manifest the taxpayers’ fundamental belief in the e-tax system, and analyzed the effect of taxpayers’ self-efficacy on the behavioral intention to adopt e-tax system. A total of 500 questionnaires was administered to the respondent with 420 returned. Out of which 30 were removed as a result of missing data. In all 390 completed questionnaires were used to complete the analysis. Path analysis was employed to identify the component structure and structural equation modeling and to examine the variables relationship. The finding strongly supports diffusion innovation theory in predicting the behavioral intention to adopt e-tax system. It is concluded that taxpayers’ self-efficacy has positive significant effect on the behavioral intention through system compatibility, system complexity and system affordability. It is recommended that tax authority should organize training to make the adopter familiarize with the innovation in order to increase the level of taxpayers’ self-efficacy.

Keywords: System compatibility, System complexity, System affordability, E-tax system and taxpayers’ Self-efficacy

JEL Codes: G10, G11

Introduction

Traditional tax filing system is the most popular method used by the taxpayers in filing their tax return in Nigeria. For decades developed countries such as, United State Canada and the Great Britain have tried to by introducing e-tax system to improve tax administrators’ effectiveness, government operation and reduce administrative cost. Tax administrators began to introduce a new innovation technology to be used in filing their income tax return due to its ability to test tax data automatically Santhanamery and Ramayah (2014). As the emergence of

information technology is getting more popular which has brought fundamental changes to the method of filing income tax with calls for additional research involving e- tax system (Jenkins, 1996; Kisska-Schulze, 2014). E-tax system is define as “non-manual tax system” which comprises both internet and technology (Suhani & Othman, 2010; Tung & Rieck, 2005).

There are two ways of filing tax return in Nigeria, including the traditional tax filing system and the newly introduced e-tax system through the use of information technology. The e-tax system is normally

recognized by the users registering with the Federal Inland Revenue Service Board (FIRSB) where a unique identification number will be issued to the taxpayers. Traditional tax filing system the most popular method used by the taxpayers in filing their tax return in Nigeria. During the traditional method of filing taxpayers calculate the amount of tax to be paid, fill and print the form and submit it by hand to the tax office. In using the traditional filing system, taxpayers need know the principle and law related to the Nigerian tax system.

E-tax filing was introduced by the FIRSB in Nigeria in May 2009 called the Integrated Tax Automation System (ITAS) by the Federal Inland Revenue Service Board (FIRSB).

In spite the effort by the effort by the government to implement e-tax system, there is still low level of adoption from the taxpayers (Elsheikh & Azzeh, 2014). Therefore, there is the need to know why there is low level of adoption of e-tax system by justifying the factors that affect their corporate decision to adopt e-tax system (Salami, 2011). Thus, this concern is important in order to assist the tax authority in planning, creating more awareness, and promote the new innovation system in the context of Nigeria. There has been an increasing academic research that fused on the determinant of information technology acceptance and its utilization among users and also taxpayers (Adeyemi, 2013; Bojuwon, 2013). With these studies among other has used variables from Diffusion Innovation Theory (DIT) which was developed by Rogers (1983), and generally used in adoption study by the researchers. The justification for using the theory is because of its parsimony with empirical research (Yi-Shun, 2003). According to Negahban and Chung (2014) the determinant of behavioural intention to

adopt a specific system such as e-tax system may likely be influence by the system compatibility with the existing system, the level of the system complexity and the capacity of the taxpayers afford the system.

The main objective of this study is to extend the Diffusion Innovation theory in the context of e-tax system adoption. This paper proposed a new component factor system affordability to increase the understanding of corporate taxpayers' adoption behavioral intention to e-tax system. This paper also identifies taxpayers' self-efficacy as a factor that has significant effect by conceptualizing with the Diffusion Innovation Theory framework to adopt e-tax system. By examining the behavioural intention to adopt e-tax system from the perspective of the income taxpayers. The result of this paper would help the tax authority to plan and developed a better strategy for taxpayers adopt the e-tax system and also gives insights on how to improve e-tax system potential adopters.

Literature review

Diffusion innovation theory

The Diffusion Innovation theory has been validated as an influential framework to explain adoption of innovation related issues with the users (Moore & Benbasat, 1996). This theory is reported to be a robust theory for conceptualizing adoption acceptance and implementation of innovation (Nassuora, 2012). The robustness of the theory is due to level of its compatibility with the result of a previous study by Weng and Lin (2011). Diffusion Innovation Theory is defined as the process by which an innovation is adopted and gain acceptance by users of certain community or population (Rogers, 1983). Diffusion Innovation Theory proposes that adoption of new innovation system is strong-minded by adopters behavioural intention to adopt which in

turn determined by corporate beliefs about the system. These corporate belief in these study are suggested to base on the system compatibility with the existing system, the complexity of the system from the taxpayers understanding and the ability of the taxpayers to afford the system are contributing factor to explain the variance in the adopters behavioural intention.

Existing study using the DIT has found the inclusion of external factor in a model are important to show whether corporate difference has effect of the adoption or acceptance of an innovation (Hong & Zhu, 2006; Zhu & Kraemer, 2005). DIT has been applied to a wide range of information technology Liu, Darabi, Banerjee, and Liu (2007), but there are limited study to have examine taxpayers behavioural intention to adopt e-tax system by employing DIT framework with an additional external factor. Previous literature were aimed relatively on e-commerce, e-retailing and e-banking (Ayo, Adebisi, Afolabi, & Ekong, 2008; Collier & Bienstock, 2006; Faloye, 2014; Khanifar & Molavi, 2012; Odumeru, 2003; Sparling, Toleman, & Cater-steel, 2007). However, cautiousness is essential to take place since we are relating the result from earlier generation of study to new technology environment. Not only has the emerging technology environment differed but the target adopters of e-tax system which may have diversified educational and economic background. As a result, it is essential to examine the adoption of e-tax system with different type of taxpayers in a different environment (Fu, Chao, & Farn, 2004).

One of the key importance of Diffusion Innovation theory is to understand adoption behaviour of a particular innovation by providing a framework to include external factor on a system adoption. Somewhat, a lot of important are attached to the inclusion of external factor

in a model which has also received more attention also in the context of Diffusion Innovation Theory research with corporate practice and differences, such as gender, age as a moderating factor. Consistent with the taxpayers practice from the traditional filing system literature Hussein, Mohamed, Ahlan, Mahmud, and Aditiawarman (2010) has found that variances exist due to corporate experience which is situational that account for a specific difference. Other study reflected that corporate differences may explicitly influence the adoption of information technology, with evident of the mixed finding obtained from the previous work that corporate differences have influence on information technology but not yet to be well understood (Agarwal & Karahanna, 1998; Agarwal & Prasad, 1998, 1999). Additionally, there has been limited empirical study to elucidate the influence of corporate taxpayers' difference in the adoption of e-tax system through the implementation of the software.

Although, researchers' on the adoption of information system has investigated the replicated some theory like Diffusion Innovation Theory and agreed with their prediction of adopting e-tax system by users. Arbore, Soscia, and Bagozzi (2014), but the fundamental factors of the theory of Diffusion Innovation Theory (DIT) construct do not fully show the specific variables that influences the any technology at the adoption stage that may affect its implementation (Kelly, Lawlor, & Mulvey, 2010). As noted by (Cao, Jones, & Sheng, 2014; Karp & Fletcher, 2014; Kisska-Schulze (2014); Rogers, 2002) future adoption of need to address how other factors influences the adoption of any new innovation. Conversely, factor influencing the adoption of e-tax system are likely to differ with the context and target user (Chu & Wu, 2004; Mahadeo, 2009; Wang, 2014). Studies has reveals

that trust has remarkable influence on the preparedness of customers to involve in an online transaction because of their personal and sensitive information (Briggs, Simpson, & De Angeli, 2004; Humphrey, Mansell, Paré, & Schmitz, 2003). Hence, system compatibility and system complexity may not be able to explain the taxpayers' behavioural intention to adopt e-tax system. As a result, it becomes important to introduce additional factor that can enhanced and predict the adoption of e-tax system with the existing factors.

The adoption context of e-tax system is quite different from a stand-alone application. Studies such as (Karp & Fletcher, 2014; Kisska-Schulze, 2014; Negahban & Chung, 2014; Santhanamery and Ramayah (2014)) reveals that system compatibility of internet has a an influence on the adopters willingness to adopt with confidence as a result of the model to examine the taxpayers self-efficacy with corporate difference. Therefore, the system affordability and taxpayers self-

efficacy is included to the framework which is not in Diffusion Innovation Theory to improve and apprehend the taxpayers behavioral intention to adopt e-tax system. In conclusion, the simplicity of DIT and the newness of e-tax system with the group of respondents, it is extended DIT can be applied with confidence as theoretical model to examine the influence of taxpayers' self-efficacy on the adoption of e-tax system through system compatibility, system complexity and system affordability.

Model and hypotheses development

The model established in this study is shown in figure 1. The anticipated model include taxpayers self-efficacy based on corporate taxpayers difference and three other factor (system compatibility, system complexity and system affordability) from the DIT model, the inclusion of the factor are buttressed by previous study in information system related paper. Figure 1below is the empirical model developed for this study.

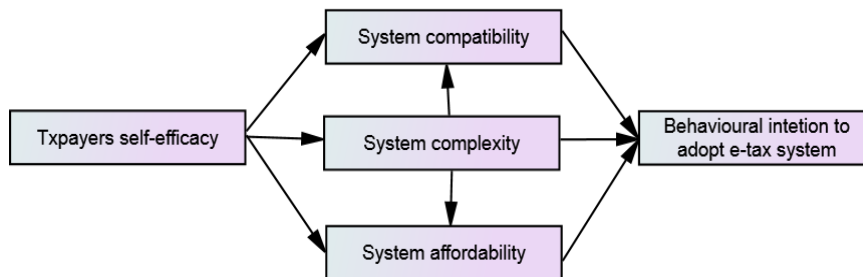


Figure 1 Computer self-efficacy

Generally, existing study has suggested a positive association between taxpayers understanding with usage and acceptance outcome of innovation(Santhanamery & Ramayah, 2014; Zhu & Kraemer, 2005). The factor system self-efficacy has been examined in information technology related literature (Barnett, Pearson, Pearson, & Kellermanns, 2014; Zmud,

1979). Taxpayers' self-efficacy is defined as the decree of corporate ability to adopt an innovation (Chu & Wu, 2004). The proposed relationship between the external factors (system self-efficacy) and system compatibility is based on the theoretical argument by (E. M. Rogers, 1976). It was postulated that computer anxiety that turn to also influence the system compatibility,

system complexity and system observability on the taxpayers' behavioural intention to adopt e-tax system.

- H1a: Taxpayers self-efficacy have positive relationship with system compatibility toward taxpayers' behavioural intention to adopt e-tax system.
- H1b: Taxpayers self-efficacy have positive relationship with system complexity toward taxpayers' behavioural intention to adopt e-tax system.
- H1c: Taxpayers self-efficacy have positive relationship with system affordability toward taxpayers' behavioural intention to adopt e-tax system.

System complexity

System complexity is the degree to which an innovation is perceived as relatively challenging to apprehend (Chang, 2005). The operational view of system complexity are been examined with four underlying variables which include, the level of system efficiency in dealing with the data, the functionality of the system, quality of the interface, and its capacity to accommodate higher number of user at the same time (Yi-Shun, 2003). Thus, to examine the effect of system complexity on taxpayers behavioural intention it is also important to examine the relationship that exist between system to adopt e-tax system it is important to examine relationship between system compatibility and system complexity with the system affordability.

Existing study using DIT believe that when an innovation is perceived to be complex the less the adoption rate will be. Complexity is found to have a significant effect on adoption of innovation evidence from the field of information system (Moore & Benbasat, 1991; Venkatesh &

Davis, 2000). Correspondingly, the adoption of online tax system by the taxpayers are been perceived to be complex during the adoption of the system with low network connectivity and the process to be followed in filling their personal data at first. Thus, complexity is employee to examine its effect on the taxpayers' behavioural intention to adopt e-tax system. Thus, this study hypothesized that system complexity will have positive relationship on system compatibility, system affordability and on taxpayer's behavioral intention to adopt e-tax system.

- H2: system complexity has a positive relationship with system compatibility to adopt e-tax system.
- H3: system complexity has a positive relationship with system affordability to adopt e-tax system.
- H4: system complexity have a positive relationship with taxpayers' behavioral intention to adopt e-tax system.

System compatibility

System compatibility is the process by which an invention is perceived as reliable with the present structure, experience and values within the system (Rogers, 1983). It refers to the compatibility of the innovation with the prevailing system which includes the software and hardware. The lack of system compatibility in the application of any innovation by an organization can affect its implementation (Atif, Richards, & Bilgin, 2012; Sahin & Rogers, 2006). In all, the first factor that is belief to predict the taxpayer behavioural intention to adopt e-tax system are hypothesized to be the system compatibility, system complexity and system affordability. Hence, the factors are influenced by and external factors.

Extensive study over the past years has provides evidence of significant effect that system compatibility has on taxpayers behavioural intention to adopt e-tax system. Compatibility is the process by which an invention is perceived as reliable with the present structure, experience and values within the system (Rogers, 1976, 1986, 2002). It refers to the compatibility of the innovation with the prevailing system which includes the software and hardware. The lack of compatibility in the application of any innovation by organization can affect its implementation (Atif et al., 2012; Sahin, 2006). Compatibility of a new system depends on how fast in the integration of the new system to the existing practice (Tornatzky & Johnson, 1982; Tornatzky & Klein, 1982). It is one of the measures of perceived innovation characteristic in DIT construct developed by (E. M. Rogers (1986)). The adoption of a new system like the online tax system will be adopted by the taxpayers when is compatible with their values, belief and custom. The application of Internet in the tax environment is one of the emerging areas of innovation that has become part of the taxpayers who usually pay tax through the online tax system.

- H5: system compatibility has positive relationship with taxpayers' behavioural intention to adopt e-tax system

System affordability

Besides the system compatibility and system complexity the adoption of e-tax system possibly will be influences by the adopters' system affordability. The majority of e-tax system adopters are relatively ignorant about the system they are trying to adopt. However, when the taxpayers are requested to describe how they adapt to a system giving the situation at hand, it promptly become difficult for

them to give their opinion on the innovation they adopt.

- H6: System affordability have a positive relationship with taxpayers' behavioral intention to adopt e-tax system.

Methodology

This paper employed a quantitative method of analysis were the questionnaire was administered to the income taxpayers in Nigeria. In understanding the respondents, the first analysis was the analysis of the taxpayers' demographic profile. The data for this paper was collected using survey questionnaire which was administered to 500 taxpayers out of which 420 was returned was return with 390 usable and 30 of the collected data was discarded as a result of missing data. The questionnaire comprises of 19 items related to the four factors adapted and used in these studies. *Path analysis was employed* to identify the component structure and structural equation modeling to examine the variables relationship. The instrument is given with seven-point Likert scale ranging from 1= strongly disagree, 2= slightly disagree, 3= disagree, 4= neutral, 5 agree, 6= slightly agree and 7= strongly agree.

Demographic profile

A total number of N= 500 questionnaire was administered to the respondent, out of which N=420 was filed and return. Of the total N= 420 returned questions N= 30 were deleted as a result of outliers and missing data related issues with online 390 questionnaire were usable to carry out the analysis. The respondents profile shows that majority of the respondents are male with N=232 (59.5%) while N=158 were females with N=158 (40.5%). On the base of the respondent age group, Majority of the respondents were age between 31-40 years with N=215 (55.1%) followed by age between 20-30 years with N=86 (22.1%), age between 41-50 years are with

N=73 (18.7%) and finally age above 51 with N=16 (4.1%) respectively. Based on the age response it indicates that the youth are the major users of the system because their knowledge on the use of internet with and they are youth with more energy and doing business. The educational background majority of the respondent are graduate with N=147 (37.7%), diploma with N=115 (29.5%), school certs with

N=102 (26.2%), and postgraduate are with N=26 (8.3%). The reason for these percentage is that majority of the adopters are youth that need to start their life but with limited job opportunity most decided to have their personal business. Based on the demographic result it shows that majority of adopters are still young. Table 1 below exhibit the detail.

Table 1. Demographic profile analysis

Gender	Male	232	59.5
	Female	158	40.5
	Total	390	100
Age	20 to 30 years	86	22.1
	31 to 40 years	215	55.1
	41 to 50 years	73	18.7
	51 and above	16	4.1
	Total	390	100
Educational Background	School certificate	102	26.2
	Diploma	115	29.5
	Graduate	147	37.7
	Post-graduate	26	6.7
	Total	390	100

Data analysis and findings

Measurement model

A confirmatory factor analysis was conducted using AMOS 20.0 to test the measurement model. Five goodness-of-fit measures were used to assess the overall model fit with the Normed chi-square (CMIN/DF) degree of freedom (DF), goodness-of-fit (GOF), Normalized fit index (NFI), comparative fit index (CFI) and root mean square residual (RMSEA). The result are higher than the acceptable value of 0.90 for (NFI, GFI, CFI) and RMSEA within the acceptable value of 0.08 as suggested by Hair, Ringle, and Sarstedt (2011) Thus, we therefore proceed to evaluate the instrument with the measure of reliability, convergent and discriminant validity.

The reliability and convergent validity was appraised using composite reliability (CR)

and average variance extracted. The analysis of the resultant coefficient is comparable to that of cronbach alpha, except for that it accounts for the real loading of the items relatively more assuming with equal weight in determining their loading

Composite reliability for all the variables on the model were above 0.09. The average variance extracted based on the result were all higher than the minimum threshold of 0.05 (Byrne, 2013; Byrne, Shavelson, & Muthen, 1989; Hair et al., 2011). Further analysis in the measurement model shows the $df = 142$, Chi-square value = 355.879 given the normed chi-square value to $CMIN/DF = 2.506$, $P\text{-value} = 0.000$, $CFI = 0.957$, $NFI = 0.930$, $TLI = 0.948$ and $RMSEA = 0.062$ which met all the requirement that the hypothesized variables met the variance of

observation in the study to proceed to the next stage of analysis the structural model.

The evaluation of convergent validity was by examine the items loading and the square multiple correlation from the measurement model. It shows that all the items loading are greater than 0.60 given the evident of convergent validity as details in table 2. The square multiple correlation are with acceptable value greater than 0.20 (Byrne, 2013). Thus, all the variables in the measurement model had satisfactory reliability value and evidence of convergent validity.

The discriminant validity is to measure and share the variance that exist between

the variables and the average variance extracted in each of the corporate variables. The analysis reveal that the shared variance among the variables were lower than the variance extracted of each of the variables. This gives the evidence of discriminant validity which is detailed in table 2. In conclusion, the analysis using confirmatory factor analysis for the measurement model demonstrated adequate reliability convergent and discriminant validity to proceed for the hypothesized structural model.

Table 2: Item loadings and squared multiple correlations of composite reliability and average variance extracted, and discriminant validity

Items	Items loading	SMC	CR	AVE
Taxpayers self-efficacy				
Tsef1	0.87	0.76		
Tsef2	0.90	0.81	0.88	0.66
Tsef3	0.83	0.69		
Tsef4	0.61	0.38		
System compatibility				
Scom1	0.70	0.50		
Scom2	0.71	0.50	0.87	0.62
Scom3	0.90	0.85		
Scom4	0.80	0.64		
System complexity				
Scox1	0.77	0.82		
Scox2	0.89	0.80	0.88	0.70
Scox3	0.84	0.79		
System affordability				
Saff1	0.82	0.68		
Saff2	0.80	0.80	0.85	0.65
Saff3	0.79	0.79		
Taxpayers behavioral intention to adopt				
Tbia1	0.82	0.67		
Tbia2	0.83	0.68	0.81	0.60
Tbia3	0.79	0.63		
Tbia4	0.78	0.61		
Tbia5	0.64	0.42		

Structural model

With the measurement model result that has demonstrated adequate goodness-of-fit indices through composite reliability, convergent validity and discriminant validity. Thus, we proceed by examining the path coefficient based on the hypothesized model using structural model. The goodness of fit indices used in the measurement model are applied in the structural model to examine the path relationship in addressing the hypotheses developed. The properties of examining the path are the standardized coefficient of the path the R-square and the variance explained by each of the construct hypothesized in the model shown in figure 2. As detailed in the in the model and with the expectation of our outcome hypotheses H4, H5 and H6 are statistically significant and practically important with path coefficient of SCOM =0.21, SCOX =0.22 and SAFF= 0.53 on taxpayers behavioural intention to adopt e-tax system. The three factors (SCOM, SCOX and SAFF) accounted for 74% of the total variance with system complexity 0.58% contributing more with 0.1% higher than system compatibility 0.57% and system affordability with 0.29% as the least contributing factor to the taxpayers' behavioural intention to adopt e-tax system.

Additionally, hypothesis H2 and H3 developed between SCOX and SCOM, SCOX and SAFF were also statistically significant and practically important, system complexity had a positive relationship with both system compatibility 0.41 and system affordability 0.50. As for the path hypothesized from the taxpayer's self-efficacy to the three factors SCOM, SCOX and SAFF adapted from the diffusion innovation theory, the finding shows statistically significant path coefficient value greater than 0.2. Hence, all the three hypotheses developed from the taxpayer's self-efficacy factors (H1a, H1b and H1c) on system compatibility, system complexity and system affordability were significant with 0.45, 0.37 and 0.54 respectively. The result shows that taxpayer's self-efficacy had a positive significant relationship with system compatibility, system complexity and system affordability towards the behavioural intention of taxpayers to adopt online tax system. In conclusion the goodness-of-fit indices show that all the criteria to consider the adoption fit the data were within the acceptable threshold which include CMIN/DF = 2.737, p-value = 0.000, TLI =0.90, NFI = 0.923, CFI = 0.949 and RMSEA = 0.067. Figure 2 below exhibits the detail.

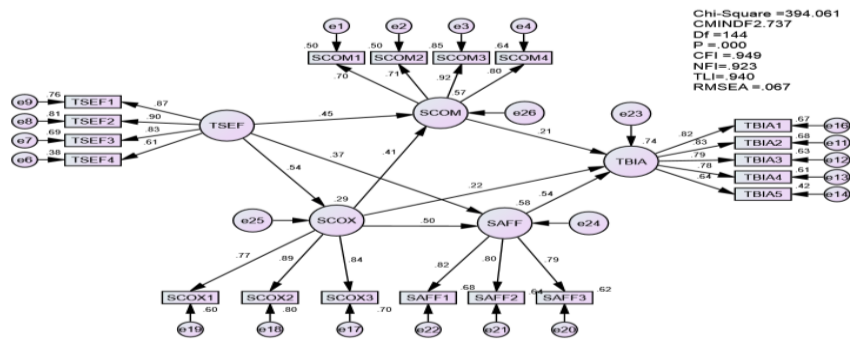


Figure 2: the hypothesized model

Implication for e-Tax System

This paper focused on Diffusion Innovation Theory to explain the practice by which taxpayer self-efficacy influenced the taxpayers' behavioural intention to adopt e-tax system. Existing literature had never been clear whether the factors relationship exemplified in DIT would likewise be relevant to more complex innovation like e-tax system. Thus, this paper strongly buttress the relevance of employing DIT to the emergent context of e-tax system adoption. Applying DIT as the theoretical framework, this paper introduced system affordability as a new variable that reflect the belief of adopters of e-tax system and examine the influence of taxpayers' self-efficacy on the taxpayers' behavioural intention to adopt e-tax system.

The result of this paper strongly buttresses the suitability of DIT to comprehend taxpayers' behavioural intention to adopt e-tax system. The statistical significant influence of system complexity and system affordability on the taxpayers' behavioural intention to adopt were observed with system complexity exerting the high effect than system compatibility. This paper also found the newly introduced variable to DIT system affordability to have a resilient influence on taxpayers' behavioural intention than the original variable (system complexity and system compatibility) in the context of e-tax system.

Given the fact that the adoption of e-tax system is voluntary with the respondent group coming from different background. The findings also provide indication of the significant influence of taxpayers' self-efficacy on the taxpayers' behavioural intention to adopt e-tax system through system compatibility, system complexity and system affordability. Consistent with the hypothesized model adopters who have higher taxpayer's self-efficacy are

more likely to afford to adopt e-tax system. Our result are in line with prior study that found a significant direct effect between system self-efficacy with DIT variables(Elie-Dit-Cosaque, Pallud, & Kalika, 2011). Furthermore, the tax authority can impact the intention of adopter by creating more awareness by encouraging self-efficacy with the other DIT variable used in the study. For the tax authority to increase the level of taxpayers' self-efficacy there would be need for the authority to organize training to make the adopter familiarize with the innovation

Conclusion

This paper is an initiation to call for adopters' orientation in e-tax system. Utilizing the Diffusion Innovation Theory as the underpinning theory, the taxpayers' self-efficacy was integrated to the hypothesized model to have significant relationship with the taxpayers' behavioural intention to adopt e-tax system through system compatibility, system complexity and system affordability. It is now concluded that taxpayers' self-efficacy has positive significant effect on the behavioral intention through system compatibility, system complexity and system affordability. It is recommended that tax authority should organize training to make the adopter familiarize with the innovation in order to increase the level of taxpayers' self-efficacy.

Contribution to knowledge

The impact of this paper to adoption of innovation research are:

- It has successfully integrated Diffusion Innovation theory variables with and external factor (taxpayers self-efficacy) in a new context of e-tax system
- Taxpayers self-efficacy was found to a significant antecedent of system

compatibility, system complexity and system affordability in the adoption of e-tax system

- System affordability was found to be the most significant variable that determined the taxpayers' behavioural intention to adopt e-tax system.

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