The Influence of Technology Characteristics towards an Online Tax System Usage: The Case of Nigerian Self-Employed Taxpayer

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ABSTRACT
Online tax system is an important innovation in managing and effective tax administration system. Its implementation has been influenced by several factors. In Nigeria however, its effective implementation has suffers major setbacks arising from poor information and technological infrastructure. Therefore, this paper examines the influence of technology characteristics (ease of use, usefulness and personal innovativeness) on an online tax system. To do this, a questionnaire was administered and analyzed using structural equation modeling to determine the significant influence of the factors. The result showed that all the indicators of technology are statistically significant as a measure of online tax system. It also indicates a positive direct relationship between the technology characteristics and online tax system. This study would give a better understanding of the relationship between technology related characteristic of an online tax system. In particular it study would help practitioners and academicians to understand the influence of technology related factors on the online tax system.

Keywords
Online Tax System, Technology Characteristics, Perceived Usefulness, Perceived Ease of Use and Perceived Innovativeness.

1. INTRODUCTION
The advancement of information technology has taken the centre point of tax administration system in developed and developing countries. It is evidence that any country that are not prepared for the modernization will definitely have to countenance in the gloomy risk of low revenue generation [1-3]. Information technology is making the advancements and services offered to the taxpayers to be more unassuming [4]. The understanding of an online tax system for taxpayers and tax administrators is to improve revenue generation, reduces compliance cost, administrative cost and improve level of compliance.

Thus, the online tax system is referred to as the transmission of tax information directly to the tax administration using the internet [5]. The online tax system makes an effective impact on the economic toward improving the level of income generation and tax compliance by the taxpayers [6-8]. However, online tax system has offered a treasured opportunity for the tax administration in Nigeria, which include but not limited to increase in the level of tax compliance, increase in tax collection and payment. This is because of the various benefits which includes, convenience, transparency, safety, time saving, cost effectiveness, taxpayer privacy and security, elimination of error notices from the tax administrations of data entry errors and improves data quality. The research questions are (1) what is the influence of technology characteristics of the online tax system. (2) Do all the indicators represent technology characteristics construct?

This paper examines the influence of technology characteristics (Perceived ease of use, usefulness and personal innovativeness) on the online tax system.

2. LITERATURE REVIEW
The Nigeria tax system has been driven by the need to increase the level of compliance by the taxpayers. Nigeria's tax administration system dated back 1914 operates in a three theirs system, government with different responsibilities and the power delineation to each tier of government. Thus, this is to avoid double taxation and conflict, which are still an issue in the Nigeria tax administration system [9]. In September 2010, several tax affiliated Act such as, the personal income tax act of 2004, company income tax act of 2004; petroleum profits tax act of 2004; Value-added tax act 2004 were amended. The company income tax in Nigeria is currently codified as the company income tax act (CITA) Cap.21.LFN, 2004 [10].

The Federal Inland Revenue Service is responsible for administering the Nigeria tax system. It is therefore vital to make taxpayers' obligations clear in the sense of being transparent, easy to understand, simple and non-confusing [11, 12]. The Government should also ensure that taxpayers understand their tax obligations and find them easier to comply with. This may require the government and revenue authorities to at all times, act with integrity and manner that the tax system would be perceived as fair. Technological characteristic in the context of the study is refers to the application or object of new technology adoption. Numerous scholars have studied and confirmed the importance of a variety of first- and second- order constructs that affect the technological context [13, 14] . The theoretical assertions were supported by a number of empirical studies conceptualized with the identification and operationalizing of the technology competence through three second-order factors: IT infrastructure, Internet skills, and e-business awareness [15] [16].

However, Batz, et al. [17] analyze the impact of technology characteristic on the rate and level of technology adoption. The study was conducted in Kenya with 17 diary technology with reverence to the influence of relative complexity, relative risk and relative investment on adoption and implementation. The finding indicates that the influence of adoption of

innovation is significantly influenced by technology characteristic of any innovation. The success and failure of an innovation are based on the roles played by individual in the implementation process in which all are being associated with.

Lin and Jung [18] examined the factor influencing innovation in the Taiwan logistic industry with 144 logistics. A questionnaire was administered and analyze with factor analysis in order to have the categories of it factors which include individual, organizational and environmental factors. The result shows that these three factors have significant influence on the technology innovation implementation. Thong and Yap [19] researched on the effect of innovation, attitudes and IT knowledge on the business size, competitiveness and information density of a corporate organization. The respondents for this study are the CEO of the organization and it found that the characteristics of the CEO have more effect on the adoption of information technology by the SMEs.

The self-employed taxpayers are more likely to adopt an innovation when the manager is more innovative and has a positive attitudes towards the system. However, for an effective understanding of technology related issues by different organization, there is the need to streamline the technology toward an effective use of the system. Louis performed a metal analysis of seventy five articles related to the innovation characteristics with their relationship to adoption and implementation. This study use compatibility, relative advantage and complexity which have a most consistent significant relationship to the implementation of any technology related research.

2.1 Perceived Usefulness

Perceived usefulness (PU) is defined according to Lu, et al. [20] as a prospective user's which is subjective or with the likelihood of using a specific innovation to enhance it processes. Jiang, et al. [21] explore more of perceived usefulness on the development and utilization of the internet technologist model to explore the ways by which it is being implemented. With the above definition perceived usefulness is accomplished by being used as advantages for easy application of a new innovation. In an organization context users of any innovation are reinforced by their performance in the use of any technology by giving bonuses. More so when a system is perceived by high users believe in the existence of positive user perception is said to be an innovation of good performance base on their benefits.

2.2 Perceived Ease of Use

Perceived ease of use (PEOU) is defined as the degree to which a potential adopter views the usage of the target technology to be relatively free of effort [22]. Innovations that are perceived to be easier to use and less complex have a higher likelihood of being accepted and used by potential users [23]. This has been widely investigated as a determinant of information technology adoption because of its wide use by researchers. Davis [22] identified Perceived ease of use as a primary determinant of IS adoption at the pre-implementation stage. Several studies have found the direct effect of PEOU on BI [3, 24, 25].

However, few studies establish no direct effect of PEOU and OTS [26, 27]. The plausible explanation for this inconsistence is that the studies with no direct effect have to do with intention to purchase through the net either at present or in the future and not ordinary adoption of IS. For instance, [26] examined the factors that affect the present and future e-purchasing intention of consumers. The survey was conducted through telephone interview, though the respondents were asked whether they have made e-purchase before to ensure only experienced respondents were involved, e-purchase has to do parting with hard earned resources, and this might affect the perception about the IS adoption. The context of this study might have affected the findings. In the earlier reported study of Wu and Chen [27] PEOU was also found not to be significant due to the context of the study e-commerce.

Therefore, in studies on adoption of IS i.e. e-filing system, perceived ease of use has found to have significant influence on intention. In the study of the factors affecting consumers' BI to adopting broadband in Pakistan [24] with a survey of 237 respondents sampled through snowball technique, used PEOU as one of the control constructs and found it to have a significant effect on the BI. Also, in a survey of the perceptions of 97 respondents in Sungai Petani, Kedah, towards e-filing, PEOU to be significant in a single stage model.

A similar finding was found in the earlier reported study of [25]. Hung and Chang [28] examined the taxpayers acceptability of the internet tax-filing system in Taiwan, and PEOU was found as an antecedent to ATT, which has subsequent effect on BI. In a similar study, Hung, et al. [29] identified the factors that determine the public's acceptance of e-government services through online tax filing in Taiwan with a survey of 1,099 respondents through the e-mail service, and found that PEOU to be an antecedent to ATT Chung, et al. [30] investigated age differences in perceptions of online community participation held by people who are not using it with a survey of 452 respondents. PEOU was found as a predictor to PU.

A similar finding was found in [31] where the authors investigated the level of adoption of e-ticketing among air travelers in China. These findings augmented the earlier study's [27]. However, PEOU was not empirically found as an antecedent to PIIT [32, 33] PEOU mediated between information system quality and ATT and PU, information quality and ATT and PU.

2.3 Perceived Innovativeness

The role of Perceived innovativeness (PI) in individuals' adoption of innovations has been acknowledged in innovation diffusion studies [34] wherein early users of an innovation are considered "innovative." Other scholars have reported that global innovativeness exhibits low-predictive power when it comes to the adoption of any specific innovation [35, 36]. Citing these and some other related research findings, [37] conceptualized and operationalized the construct PIIT, which they define as "the willingness of an individual to try out any new information technology."

The direct effect of PI on the use of e-tax filing has been established in some studies. Yi, et al. [38] showed the roles of individual innovativeness in the acceptance of IT-based innovation by developing some new measures known as adopter category innovativeness (ACT) and therefore compared its effectiveness with the existing measures of PI. Most recently, Deng, et al. [39] examined the factors that influence users' intention to transfer their usage from the offline to the online channel of banking institutions that offer similar services in both channels in China. A similar result was found by Hung, et al. [29], where the authors investigated the factors that determine the public's acceptance of e-government service of online tax filing in Taiwan. In

furtherance, the moderating role of PI between innovation characteristics and BI was first investigated in two early studies [40].

3. METHODOLOGY

This research is part of the growing study in the context of Nigeria. The population of the study is the registered self-employed taxpayers that have the knowledge of using the online tax system by the corporate taxpayers in Nigeria. Hence, this study uses the construct of survey questionnaire to administer the questionnaires to the respondents. The questionnaire designed for this study entails 12 items. Structural equation modeling is used to as the main statistical technique for this study. Based on this, the methodology used in the instrumentation is on the guideline narrated by [41, 42]. To estimate the hypothesis put forward by this researcher. SPSS (version 20.0) is used to analyse the Principal Component Analysis (PCA) and the AMOS (version 20.0) for Confirmatory Factor Analysis (CFA) were used. The authors used a 5-point scale of "1 - strongly disagree" to "5- strongly agree". The Questionnaires were distributed to registered self-employed taxpayers through their email. A total of 600 were sent to the registered self-employed taxpayers in which 507 were returned. The effective response rate is 84.5 per cent, which is rather high as per similar previous studies.

3.1 Sampling and Data collection

A total of 600 questionnaires was administered to the registered self-employed taxpayers for a period of three months from January to March 2014. A total number of 507 were received out of which 477 were usable. The remaining 30 were discarded as a result of incomplete and missing related issues. The respondents in this study are income taxpayers who are using the online tax system in filing of their tax returns since its implementation. The objectives of the study are clearly stated before the questionnaires are being distributed.

The demographic profiles are detailed in Table 1 below. Preponderances of the respondents are males with a total number of responses of 302 respondents at a percentage of (63.3%) while the female respondents are 175 in the percentage of (36.7%). The age group respondent shows that 361 of the respondents are aged above 30 years with (75.7%), and 116 of the respondents are aged less than 30 years with (24.3%). On the base of the hour used in the filing and payment of their income tax about 102 respondents indicated that they use less than two hours after filing their taxes, which indicate 21.4%, while over 375 (78.6%) respondents indicate they spend more than two hours after filing and payment of their income tax through the use of an online tax system.

Table 1: Demographic profile of the respondents

Variables		Frequency	Percentage
Gender	Male	302	63.3
	Female	175	36.7
		477	**100**
Age	Less than 30 years	116	24.3
	30 years and Above	361	75.7
		477	**100**
Average hour used in filing	Less than 2hours	102	21.4
	More than 2hours	375	78.6
		477	100

3.2 The Exploratory Factor Analysis

The exploratory factor analysis was conducted by first using the Kaiser- Meyer-Oklin and the Bartlett's test to check for the fitness of the statistical data. Thus, the Kaiser- Meyer-Oklin tested is 0.797 which is above the threshold value of 0.60. Therefore, this result is considered as adequate for further analysis [43]. The Bartlett' test of sphericity is adequate to be told by the researcher as statistically significant with Chi-square value = 3185.692, DF =136 and Sig value = 0.00.

More so, the 17 Questionnaire items were subjected to principle component analysis with varimax rotation to check the applicability of the statistical data for the analysis. The loading of all the 17 items was between 0.637 - 0.875 which indicate that all the items were accepted and the principle component shows that this item were loaded into four factors as predicted by the researcher with the Eigen values above the threshold of 1 clarify 4.429, 2.562, 1,942 and 1.779 respectively. The overall variance explained is 63.040. In suggesting the appropriate fitness of the entire dimension which exceeds the 0.60 percent shows the data is appropriate for further analysis. The components extracted indicate correspond for the technology factors toward the online tax system in a structural model technology characteristic (PU, PEOU, PIT) and the Online tax system. The exhibit in table 2 below shows the result of the principle component analysis.

Table 2. Principle Component Analysis loading and component reliability

Questionnaire Items	Loading	Eigen Value	%Variance Explained	@
Perceived usefulness				0.817
PU1	.850			
PU2	.772	1.779	20.941	
PU3	.834			
Perceived innovativeness				0.808
PIT1	.806			
PIT2	.875	1.942	37.603	
PIT3	.836			
Perceived ease of use				0.854
PEOU1	.721			
PEOU2	.777			
PEOU3	.748	4.429	50.503	
PEOU4	.761			
PEOU5	.768			
PEOU6	.754			
Online tax system				0.801
OTS1	.836			
OTS2	.753			
OTS3	.757	2.562	63.040	
OTS4	.696			
OTS5	.637			

3.3 Confirmatory Factor Analysis

In this study, confirmatory factor analysis is used to determine the construct validity of the instrument. This means the construct of the study explained the variables within the construct [44-46]. In any analysis when we have a very high correlation of instrument within the same construct, there is a sign of construct validity. Furthermore, confirmatory factor analysis enhanced the control for assessing the unidimensionality than the exploratory factor analysis [47]. The Confirmatory factor analysis model is run through AMOS 20.0 statistical software. The CFA was used on the 17 items to see that each of the items loaded on it separate constructs. Finally, the validity used for this study includes the construct and convergent validity.

A measurement model was used to specify the each construct on the level of its unidimensionality with the run of the CFA on the whole construct. According to Byrne [48] the threshold of the comparative index is (CFI) is 0.90-1, which will show how strong the evidence of it unidimensionality. The model fit indices will be shown in exhibited in table 3.

More so, convergent validity is the degree by which a multiple methods of measuring a variable is provided by the same statistical result [49]. The convergent validity of this study is established on the Bentler-Bonerr coefficient and Bentler-Bonett Normed Fit Index which is analyzed on the convergent validity. [50] give the index used in measuring different approach of the constructs. According to the guiding principle by [Hernandez, et al. [26], 51, 52].

Bollen [53] suggested that if the index value is greater than .90 and the RMSEA above .50 and the Chi-square less than .30 it indicates that the model fit the data and it is accepted. As earlier mentioned AMOS 20.0 was used to analyze the confirmatory factor analysis with the use of structural equation modeling [54]. Table 3 below shows the number of variables in the model. The collected data has no missing data and to univariate and multivariate normality of structural equation modeling. The maximum likelihood estimation was used to maximize the obtained values of the criterion to predict the variables.

Table 3. Number of Variables in the Model

Variables	Number
Total Number	43
Observed Variables	21
Unobserved Variables	22

4. DISCUSSION OF FINDINGS

Based on the approaches, we tested in the model and the hypothesis using the structural equation modeling techniques. The finding of the analysis is reported in figure 1 below. The overall model fit of the initial analysis predicted that technology characteristic has a significant positive relationship on the online tax system. As a researcher, we conduct an additional analysis to provide further insight about the determinant of technology characteristic toward the online tax system. A supplementary analysis explored the second-order factor model that the three constructs were modeled as first-order latent variables that determined the by the second-order variables [55, 56]. The latent variables with inter-correlation among the first other factor and the latent variables will influence the first-order factor [14, 57].

However, from the construct of perceived usefulness, perceived ease of use and perceived information technology is the use as the baseline model as the first-order factor. In this study, the researcher design technology characteristics as a second-order factor. This model can be justified from the theoretical model and empirical perspectives. The coefficient of the model fit has an upper bound of 1.0 with high value implying that the relationship between the first-order factor is sufficiently captured by the higher-order factor steward 2002 hence the second-order factor model with these three first-order factors is justified by Chin, et al. [58].

With the structural equation model using Amos 20.0 in the initial analysis (figure1), we found the significance value of Chi- square (CMIN) = 516.232, P= 0.000, DF = 115, CFI = .870, and RMSEA 0.86. Based on this result it shows a low value of fit. Chin [59] explained that the standardized paths could be at least 0.20 and ideally above 0.30 in order to be considered meaningful for discussion. Hence the researcher suggested for modification, which will further explain the model and the relationship and a fit modification to the data to fit the model effectively. Thus, when a modification is suggested and applied there is the expectation for a better model fit from the fit indices.

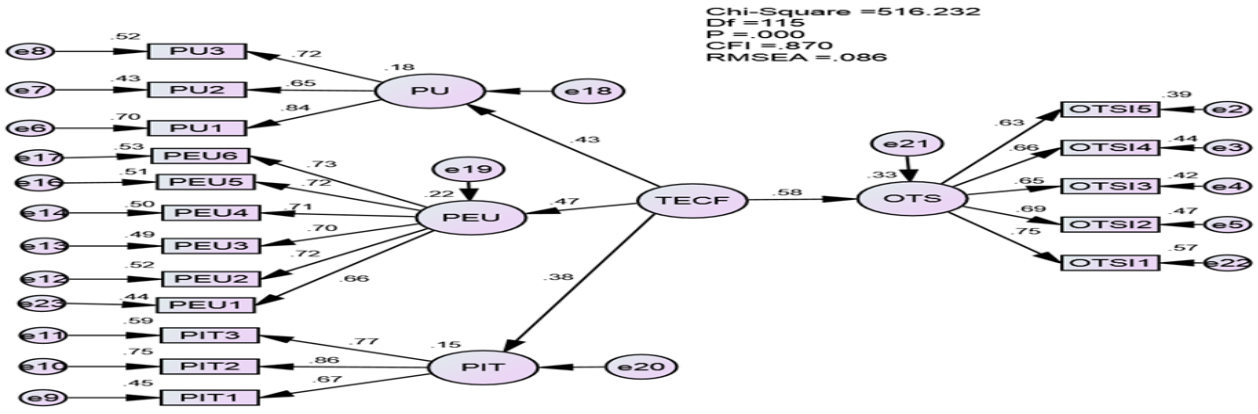

Fig 1: Initial hypothesized model

On the second revised model figure 2. The result of the CFA showed a significance value of Chi- square (CMIN) = 212.185, P= .000, DF = .86, CFI = .948, and RMSEA .056. As a result of the interpretation of the obtained data, the new fit indices displayed a relatively better fit when compared to the initial analysis. Also, the number of the respondent is significant for this study since it above the minimum of 200. Previous study suggested that the fit indices are most time determined by the sample size. In conclusion the revised model fit the data with better fit indices.

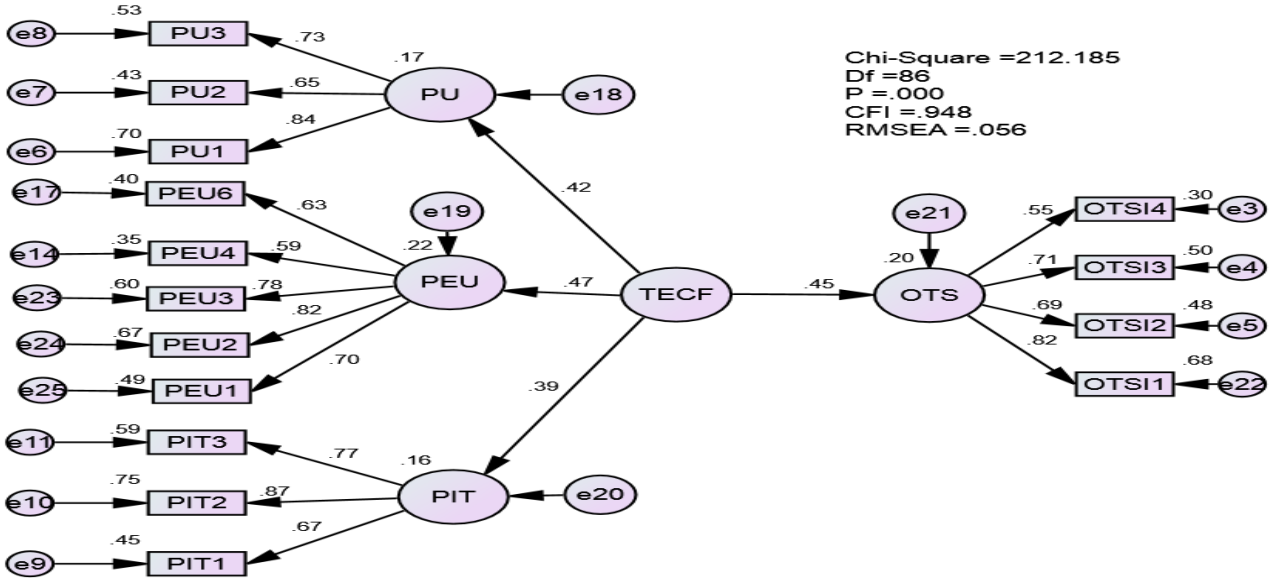

Fig 2: Revised hypothesized model

A review of previous studies shows that perceived ease of use, perceived usefulness and perceived innovation of information technology are factors that determined the technology characteristic which is intended to test on the online tax system. This study will significantly contribute to how the factors impact online tax system through the use of the structural equation model. Technology characteristics have a positive relationship of (0.45%) slandered regression weights with the online tax system. This relationship answers the first hypotheses: (H1) There is a significant positive relationship between technology characteristics and online tax system. The second hypothesis based on the research question that; do all the indicators (PEOU, PU, and PIIT) represent technology factors as indicated in the construct? (H2) All the indicator of technology characteristic is statistically significant as and indicators in the structural model with Perceived usefulness explained (0.42%), Perceived ease of use (0.47) and Perceived innovativeness of information technology (0.39) of the technological characteristics.

5. CONCLUSSION

This study used the structural equation model to understand the indicators of technology characteristic and the influence of technology characteristics of an online tax system in Nigeria. This study has also provided evidence that technological characteristics can be successfully applied to the study of an online tax system the case of Nigeria SMEs. The paper is an investigative study the technology characteristics influence online tax system and the corporate taxpayer's perception in Nigeria. These studies examine the relationship between online tax system and the technological characteristics of the respondent.

Further out result shows that all the indicators of technological characteristic are statistically significant in the hypothesized model. From the findings, it is described there is positive relationship between the technology characteristic and online tax system in Nigeria based on the respondent perception and the statistical use of structural model. Secondly, the finding indicates that all the indicators represent the technology value as indicated in the constructs. The study is instrumental in the existing academic research by reducing the knowledge gap as limited study has carried out in the Nigerian environment.

6. LIMITATIONS AND FUTURE STUDY

Firstly, this study has not taken into account any other factors that can still represent technology factors. Furthermore, this study is limited to only self-employed taxpayers that registered with the Inland Revenue board. Secondly, it simply considers the technology characteristic apart from many other research themes of online tax system implementation. Hence, further study should devote attention to individual income taxpayers who are not covered in this study. Also, the sample size should be increased to cover both the registered self-employed taxpayers that are using it and those that registered but not using the innovation for filing and payment of their tax return at all the three tiers of the government.

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