An assessment of the factors influencing adoption of e-filing system in Nigeria

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Abstract: Electronic tax filing (or e-filing) is a system for taxpayers to file their taxes via an electronic system directly to the tax authority. The main objective of this study was to investigate the determinants of the intention of taxpayers to adopt e-filing system in Nigeria. Based on the technology acceptance model (TAM) and technology readiness index (TRI) theory, 175 self-employed taxpayers in the Lagos State of Nigeria have responded to the survey conducted. This study found that technology readiness (TR), perceived usefulness (PU) and perceived ease of use (PEOU) have positive relationships with the intention to adopt the e-filing system. However, the result indicates that only PEOU is a statistically significant factor influencing the intention of taxpayers to adopt the e-filing system. The study recommends that the government should focus on ensuring the e-filing system is more user-friendly and easier to use for the taxpayers.

Keywords: e-filing; e-tax; technology adoption; perceived usefulness; perceived ease of use; Nigeria.

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1   Introduction

In order to become a market leader, companies have been struggling to compete globally. Not left to the companies alone, governments the world over are also experiencing challenges and have continued to ensure better services are rendered to their respective citizens. One method of achieving this objective has been the prioritisation. In addition, there have been continuous exploration and prioritisation of information communication technology (ICTs) to better improve delivery and bring about advancement in the dissemination of services and information (Kapil and Rajhans, 2019; Azmi et al., 2012; Chen, 2010). An increase in internet users globally and affordability and accessibility of ICT has made authority and government to shift from the manual systems of rendering services to electronic means (Satapathy et al., 2014; Internet World Statistics, 2013). The revolution in information and communications technology (ICT) has continued to shape the lifestyle of citizens in any country. ICT has come a long way in influencing the way and manner in which citizens interact with their government and how the government brings innovative technological developments to them. This system of governance is called 'e-government' (Bertot et al., 2012). To illustrate the importance of e-government services in boosting economic activities, Lallmahomed et al. (2017) stated that lack of adoption and use of e-government services by the public would lead to failure of e-government projects and resultant wastage of income of taxpayers. This is so because governments avail online services via virtual platforms which aid the general public to gain access to public services, so as to ultimately increase revenue collection and facilitate economic growth.

One of the services provided by the government through its e-government services is filing tax returns electronically, which is referred to as the electronic tax filing or e-filing system (Field et al., 2003). Through the implementation of e-tax services, a number of states have been able to upsurge their overall tax collection in the country, hence increased convenience and revenue growth. Increase in revenue collection is important to any nation since taxes can be regarded as a subset of income for the government. E-filing is being implemented in order to enhance the efficiency and effectiveness of the administration and management of the tax system and transmission of information to taxpayers (Ozgen and Turan, 2007). Kamau (2014) states that the demand for the adoption of technology is a dynamic strategic instrument for enhancing tax compliance to be matched with an institution's mission or vision. He further mentions that organisations, tax businesses, and tax authorities should consider technology in their tax functions. The integration of technology into the tax system would bring about efficiency and effectiveness in tax filing and payments.

The e-filing system was first introduced by the Inland Revenue Service (IRS) in the USA during the 1986 year of assessment with the main aims of improving efficiency in the processing of tax returns and benefiting the tax administrators (Carter and Christian-Schaupp, 2008; Muita, 2011). The e-filing system is a platform that allows taxpayers to submit their tax returns electronically to the tax administrator. It is a system that eliminates the old system of manual filing to an electronic filing system (Azmi et al., 2012; Wasao, 2014). E-filing may also be described as the process of submitting tax returns over the internet, utilising the approved software meant for the preparation of income tax imposed on the citizens or body corporate (taxpayers) which differs with the income earned by the taxpayers (Kumar and Gupta, 2017). This study was motivated by the relatively recent introduction of the e-filing system in Nigeria in December 2014. It is

a component of the Integrated Tax Administration System (ITAS), which is an initiative to change the tax administration and management system from a manual to an electronic system (Federal Inland Revenue Service, 2014). It aims to increase the efficiency and effectiveness of tax administration and management and to bring about higher tax compliance among the taxpayers. According to the Federal Inland Revenue Service Board (FIRSB), Nigeria, the e-filing system was piloted and implemented in Lagos and Abuja in March 2015 but has yet to be adopted by self-employed taxpayers. From the foregoing, worth mentioning is that studies on e-filing in Nigeria are relatively low.

The e-filing initiative can potentially be advantageous for improving the effectiveness and efficiency of tax administration. The idea of e-filing is the enhancement of deliberate submission with the recommended requests for submission of returns. The ITAS has resulted in the growth of e-government in Nigeria. This is so because this technology not only enables taxpayers to individually calculate how much tax they owe to the government, but it also makes them able to pay their taxes online without suffering the inconveniences of waiting in long queues at the tax office and physically present themselves to tax authorities a feature present when using the manual filing system (AlAwadhi and Morris, 2009). However, these advantages may not be fully realised due to taxpayers' unwillingness to recognise and use the system because of reasons like unstable power supply, low internet connectivity, inadequate infrastructural facilities, non-functioning of the system, and lack of support (Apulu et al., 2011). KPMG Africa (2016) states that the e-filing system took three years before taxpayers in Kenya finally accepted the system due to the slow response to the e-filing website. Ambali (2009) states that it has been shown that in countries that have implemented the e-filing system, the move to the electronic system and its acceptance, have involved a tremendous effort from all parties concerned.

A study conducted by Abdul Aziz and Idris (2012) in Malaysia demonstrates that there is low usage of the e-filing system by the citizens, notwithstanding the benefits that it can provide. Another study by Abdul Aziz and Idris (2017) in Malaysia stated that in 1997, the percentage of utilisation of the e-filing system among tax practitioners increased due to advantages presented by the system in comparison to the manual filing system. The benefits include increased efficiency, money and time saving, reduction of mistakes which are as a result of the one-time entry of figures as well as the fact that the authorisations are executed by tax preparation software.

Azmi and Kamarulzaman (2010) elucidate that one of the problems faced by the tax authority during the implementation stage of the e-filing system is the intention of the public to adopt the system. While a good deal of researches has been done to understand the intention of Nigerian people toward paying Islamic tax (see, for example, Farouk et al., 2018; Saad and Farouk, 2019; Saad et al., 2020), research on the intention on e-filing adoption is still in its infancy stage. Hence, there is a need to conduct a study to investigate the intention of taxpayers towards the adoption of the e-filing system in Nigeria by looking at the factors, such as perceived usefulness and perceived ease of use of the system. A case study on e-filing system of Income Tax Department of India by Singh et al. (2019) stated that the vital factors which need to be addressed in order for prospective adopters to be encouraged to join to any information system for usage. These attributes include training and awareness of the system to citizens on how to use the system. Also, the particular system should be easy to use that is it must be usable or user-friendly. Additionally, to induce adoption, a system must be both reliable and available.

This study aims to investigate the relationship between technology readiness (TR), perceived usefulness (PU), and perceived ease of use (PEOU) and intention to use the e-filing system. Besides, the study investigates the relationship between PU and PEOU. Hence, questions, such as, 'What are the relationship between TR, PU and PEOU and intention to use?' and 'What is the relationship between PU and PEOU?' with regards to the e-filing system, are answered. Understanding which factors significantly influence the intention to adopt the e-filing system is crucial for the government of Nigeria, as it would be a waste of resources if the taxpayers do not fully utilise the investment made on the e-filing system. The results of this study can assist the government in formulating strategies to enhance the take-up rate of tax e-filing. The study focuses on self-employed taxpayers in Lagos state, which is the commercial hub, having the second largest population in Nigeria. Moreover, the e-filing system had already started in Lagos state at the time of data collection.

The remainder of this study consists of a literature review, methodology, results and discussion and conclusion.

2   Literature review

2.1   E-filing system and its adoption

E-filing is an e-government initiative utilised to modernise the system of tax governance worldwide. It is one of the major components of e-government provided by the government for the citizens to file their tax returns (Deakins and Dillon, 2007). The e-filing system may be described as a system that allows taxpayers to file their returns in a computer-readable file format from the comfort of their homes or offices directly to the tax administrator. Besides, it allows them to receive feedback almost immediately (Edwards-Dowe, 2008). In order for e-filing to be successfully adopted, taxpayers need to have access to a personal computer (PC), uninterrupted internet connection and tax software. In the case of Nigeria, taxpayers are not required to buy tax software because the e-filing platform is integrated into the website, which as mentioned above, can be accessed from the comfort of the taxpayers' homes or offices, but other resources, like PC and internet access, are needed.

E-filing is another platform for filing taxes that does not require the taxpayer to go to the tax administrator; tax returns are filed through the use of ICT. E-filing is a technological innovation that does not require taxpayers to go to the tax authority or administrators to submit their tax returns (Ozgen and Turan, 2007). E-filing provides many conveniences to taxpayers (shorter time to file, filing from any place with internet, ease-of-use, information searching, and online transactions) that are not available through the traditional way of filing. E-filing also reduces calculation error on the tax returns form. E-filing offers many benefits to service providers as well, i.e., the tax authority. To the tax authority officers, e-filing minimises their workload and operational costs due to the submission of tax returns in a paperless environment. At the same time, it also reduces the cost of processing, storing and handling of tax returns (Azmi and Kamarulzaman, 2010).

Intention to adopt the e-filing system can be influenced by the taxpayers' perception of the system. Perception, in the case of a technological introduction, can be described as the capability to understand and comprehend that particular technology (Davis, 1989). In

this case, perception can also mean what people think about the introduction of new technology to enhance the effectiveness and efficiency of the old system (Davis, 1989).

Before the unveiling of the e-filing system, all taxpayers used a manual system for filing their tax returns. In deciding to use the e-filing system, perception plays a role. Taxpayers try to reflect on whether or not it will be of benefit to them before using the system. The issues of usefulness, ease of use, security, confidentiality, and efficiency of a system, also affect the perception of people (Davis, 1989; Haryani et al., 2015). Geetha and Sekar (2012) examined how taxpayers perceive the operations and procedures of the e-filing system in India. The results show that 89% of the individual respondents know and understand the procedures involved in the e-filing system. This has to do with its usefulness and ease of navigability of the e-filing system. It can be deduced from the above that many of the taxpayers have a good perception of the e-filing system and are satisfied with it. However, this result cannot be generalised because the factors that determine taxpayers' utilisation of the e-filing system may differ from one region to another (Geetha and Sekar, 2012; Haryani et al., 2015). In the Nigerian context, Farouk et al. (2018) have used the theory of reasoned action with the introduction of moderating the role of religiosity in understanding behavioural intention toward the payment of Islamic tax. They found that attitude and subjective norm play an important role in shaping Nigerian behaviour towards the payment of Islamic tax.

If taxpayers have a positive perception of the e-filing system, chances are this can increase the adoption rate. In India, e-filing has been witnessing a considerably good acceptance rate since its advent in the year 2008, and the acceptance rate is increasing annually. This increase in the adoption rate can be attributed to the taxpayers' perception of the benefits that can be derived from the e-filing system over the use of the manual filing system. Hence, when taxpayers' perception of the system is good, in that it is useful and more beneficial than the manual system (perceived usefulness – PU) and that it is easy to use (perceive ease of use – PEOU), in addition to other factors which may influence their acceptance and use of the system, it will affect the behavioural intention of e-filers (Haryani et al., 2015). Gayathri and Jayakumar (2016) document that citizens adopt e-filing system based on different perception which ranges from the faster tax refund, cash rebate and forced mental pressure. Though, despite the ease of use of the e-filing system taxpayers are still facing difficulties in its operation and peak rush (Kumar and Gupta, 2017). In addition, Temesgen (2018) documents that the e-filing system brings about increasing productivity, reduction of paper works, cost reduction, reliability increase and reduction of errors. Bojuwon (2015) also states that the adoption of the e-filing system has received impetus from the developing to the developed economies of the world. This is attributed to the importance of the system which is to bring about a reduction in errors and corruption opportunities paramount with the manual filing system which may ignite organisations to evade tax. In another study conducted by Yildiz and Topal (2017), the document that payment of taxes electronically is one of the critical and important services provided by the government in the sense that it assists the taxpayers to easily remit their tax returns. They stated further that acceptance and the use of the e-filing system is due to the trust the citizens have in it.

2.2   E-filing system in Nigeria

E-filing system is currently evolving and relatively new in Nigeria. The introduction of the e-filing system was fuelled through the reports of the International Monetary Fund (IMF) Fiscal Affairs Division in 2004, 2005 and 2006, respectively (Newman and Eghosa, 2019). The IMF recommends the implementation of the electronic taxation system to the FIRS and approval was given to the authority 2010 to install and implement an electronic taxation system. The electronic taxation system introduced by the FIRS is referred to as the ITAS. ITAS consists of six e-services such as e-registration, e-stamp duty, e-tax payment, e-receipt, e-filing and electronic tax clearance certificates (e-TCC). E-filing system which is the focus of this study is a very important aspect of ITAS.

The FIRS Nigeria documents that e-filing will be of great advantage because of the delay that is characterised by the manual system of filing taxes (FIRS, 2014). The e-filing system in Nigeria integrates a web-based tax software which means that taxpayers need not purchase any software in order to file their taxes but must have access to computers and the internet. With the deployment of the tax e-filing system under its ITAS, this system is believed to provide an efficient, transparent and effective taxation system that will optimise the collection of revenue and voluntary compliance (FIRS, 2014). In line with the changing system of governance and collection of revenue, technology has made the process of governance and the running of the business to be done effectively and efficiently with little or no error. The tax e-filing system was built in an effort to increase the speedy collection of tax, compliance, reduction in administrative cost and to ease taxpayers to pay tax quickly and easily (Abdulrazaq, 2015).

2.3   Relevant theories

Due to the vital role that technology plays globally, different models have been developed to examine the intention of users to adopt the technology. Examples of these models include the technology acceptance model (TAM) which was developed by Davis (1989); the technology readiness index (TRI) by Parasuraman (2000); and unified theory of acceptance and use of technology (UTAUT) by Venkatesh et al. (2003). This study uses only the TAM to investigate the intention of taxpayers to adopt the e-filing system, which is at the introductory stage in Nigeria. TAM expresses how a person's intent to use an electronic system is influenced by their perception that the particular online database might help them more as well as be more user-friendly than the former filing method (Udo and Bagchi, 2011). Moreover, Nath et al. (2013) found that the method is simple and has gained empirical backing, thus gaining popularity amongst information technology and information system researchers.

The TAM clearly explains the factors that determine the adoption and intention to use a particular electronic service. The constructs used are PEOU and PU (Davis, 1989; Venkatesh and Davis, 2000). PU can be described as the level to which an individual perceives or thinks that using a specific system will improve his or her performance in the job. Additionally, Perkasa and Rustam (2016) stated that there is an interrelationship between how effectively a system is used and its productivity since the manner in which an individual perceives a particular technology to enhance performance, influences their

adoption, hence perceived usefulness. On the other hand, PEOU refers to the level to which people think that using a particular system will be hassle-free or free of effort (Davis, 1989). The TAM also explains that the usefulness of a system is determined by the ease of use of that particular system (Venkatesh and Davis, 2000).

This model has been used to investigate the individual acceptance of the e-filing system. Gallant et al. (2007) establish that PU, which was measured with 'e-filing saves time', and PEOU, measured with 'software for e-filing tax returns is easy to use', significantly influenced individuals who e-filed and those who did not. Ozgen and Turan (2007) provide empirical evidence on the taxpayers' behavioural intention to adopt online tax filing in Turkey. Using TAM, they find that PU and PEOU positively and significantly influence the taxpayers' behavioural intention. E-filing provides many benefits to the taxpayers, but all depend on the intention to accept and utilise the system (Moorthy et al., 2014).

Technology readiness index (TRI) was developed by Parasuraman (2000) in order to measure the beliefs of people about technology. In this model, technology readiness (TR) alludes to individuals' inclination to adopt and utilise new advancements in order to achieve specific objectives both in their place of work and their home life. TRI is characterised by the following construct, which can be categorised into contributors and inhibitors. Contributors include optimism and innovativeness, while inhibitors are discomfort and insecurity (Parasuraman, 2000). The construct TRI comprises four sub-division called 'index'; they are; optimism, innovativeness, discomfort, and insecurity. Optimism refers to the positive perception of technology and the belief that it will offer people more control, flexibility in performing their functions, and overall efficiency. Innovativeness alludes to a propensity to be an innovation pioneer and thought pioneer. Discomfort comprises a view of the absence of control over technology and a sense of being overpowered by it. Insecurity includes doubt of innovation and incredulity about its capacity to work appropriately. Optimism and innovativeness are drivers, while discomfort and insecurity are inhibitors of TR. Positive and negative perceptions about technological innovation may exist together, and individuals can be arrayed along a technology perception continuum from strongly positive perception toward one side and to strongly negative perception at the other (Lin et al., 2007).

This study adopts the TAM and TRI to study the adoption of the e-filing system in Nigeria by examining the determinants of TRI (i.e., optimism, innovativeness, discomfort, and insecurity) and TAM (i.e., PU and PEOU) respectively towards the intention to use the e-filing system by self-employed taxpayers. As the system is very new in Nigeria, the framework adopted for this study only examines the intention to use rather than the actual usage as suggested by the original TAM by Davis (1989). This is because the e-filing system for Nigeria has just been introduced, and at the time of the study, it has yet to be adopted by the self-employed taxpayers. In addition, the intention is considered as a function of attitude towards behaviour, and therefore, it can be used to predict actual behaviour (Ajzen, 1991). Prior literature has documented the significant influence of TR, PEOU and PU on behavioural intention. These factors have also been suggested as the critical determinants of technology adoption (e.g., Davis, 1989; Agarwal and Prasad, 1999; Venkatesh and Davis, 2000; Parasuraman, 2000; Azmi and Kamarulzaman, 2010). Figure 1 presents the framework of this study, which illustrates how TR, PU and PEOU influence intention to use the e-filing system.

Figure 1 Research framework
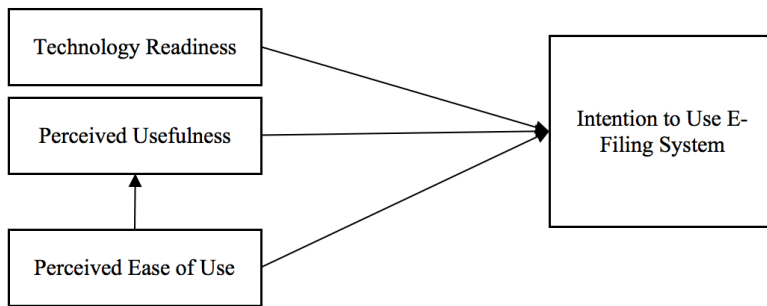
2.4 Technology readiness and intention to use

In a study led by Chen and Chen (2008), they found that personality has any kind of effect in the adoption procedure of IT and this might clarify how its qualities of the technology; personality attributes as measured in the TRI have a remarkable impact on the technology adoption. They likewise found that users appear to face IT positively and transparently and are more averse to concentrate on its negative viewpoint. These suggest that the higher the effect of optimism and innovativeness the readier the user and the higher the effect of discomfort and insecurity, the less ready the user of the technology will be. It means that the positive perception of people towards technology influence them to its adoption while the negative feelings or perception draw them back (Parasuraman, 2000). Furthermore, Lin and Hsieh (2006), in their study on the role of technology readiness on intention to use e-services in Taiwan found that TR is critical driver of behavioural intention and that increased client TR prompts higher perceived intentions, they additionally affirm further that the more fulfilment a client has on a technology, the more probable they are to utilise it once more. TRA and TAM have been widely utilised to examine the use of technology innovations, one such theory that put the personality of the individual at the centre is TRI (Walczuch et al., 2007). This study adapts TRI models which incorporate into another model because readiness of people to accept new technology cannot be left.

In a study by Lin et al. (2007), they examined the relationship between technology readiness (TR) and intention to use and found that TR positively affects intention to use. As stated earlier, TR determinants are distinguished into what creates encouragement and/or discouragement towards the behavioural intention of the consumer to adopt a specific technology. Parasuraman (2000, 2008), gathered that a positive relationship exists between TR and the use of technology. In another study by Elliott et al. (2013), they found that there is no direct positive relationship between intention to use and technology readiness (TR). They also found that TR is not significant to the intention to use. Due to the above, it is envisaged that the hypothesis is developed to examine the relationship between the determinants of readiness and intention to use. In this manner, the following hypothesis was developed:

H1   There is a positive relationship between taxpayers' technology readiness propensities and their intentions to use the e-filing system.

2.5   *Perceived usefulness and intention to use*

In this research work, PU denotes the perception of taxpayers of the usefulness of using an electronic system to pay their taxes (e-filing). PU also relates to the degree to which a particular IT system increases and individual's execution and task effectiveness. Thus, high perceived usefulness of a system is achieved when a user considers that the connection between the use and performance of that system is positive. A study by Omotayo and Adebayo (2015) confirmed the statement above when they concluded that PU was significantly and positively related to the intention to use internet banking among student at a university in Nigeria.

PU, in terms of adopting new technology, has been empirically verified by researchers see for example, (Mamta, 2012; Aminul-Islam et al., 2012; Mustapha, 2013; Noorhayati, 2011; Syazwani, 2011; Ozgen and Turan, 2007). They have also found that PU is a significant determinant of intention to use a particular system. The significance of PU has been extensively discussed in various fields. Previous studies have also noted that PU has a direct effect on behavioural intention to utilise the internet shopping, real-time training on the web, internet banking, e-commerce and e-government services, like e-filing (Abdul Aziz and Idris, 2012; Azmi et al., 2012). The results of past studies have likewise empirically shown that the intention to use the e-filing system is to a great extent driven by PU. Yadav (2017) concluded that PU significantly impacted an individual's acceptance of e-services in India. Furthermore, a study conducted in Greece by Chatzoglou et al. (2015) showed that PU had a positive influence and is the best predictor variable on residents readiness to make use of e-government services. Similarly, in the Nigerian context, Nwatu and Ezeh (2017) examined the point of sale usage as a system of paying electronically and found that PU was significantly and positively related to a willingness by individuals to use the system.

This implies that the behavioural intention of citizens will increase in accordance with the increase in PU since taxpayers might want to have a system that is useful to them (Azmi, 2010). In another study by Sondakh (2017), they found that PU has a positive and significant effect on the attitude of taxpayers to utilise an electronic tax system. This means that PU is one of the determining factors that would affect taxpayers' attitudes to use electronic tax system. Based on the findings of Sondakh (2017), it can be deduced that despite the purpose for which the government introduced the system, the taxpayers expect it to be able to fulfil the intention for which they have been used. Murniati et al. (2018), in their study conducted among personal taxpayers in Pratama Pekanbaru Senapelan, found PU to maintain significant influence on the use of the e-filing system and that PU has a positive relationship with the utilisation of the e-filing. Also, in extant literature by Agarwal and Prasad (1999), they opined that taxpayers adopt the e-filing system because they have found it to be useful when filing their tax returns. Based on the arguments above, the following hypothesis was developed:

H2   There is a positive relationship between taxpayers' perception of the usefulness of the e-filing system and their intention to use it.

2.6   *Perceived ease of use and intention to use*

Perceived ease of use (PEOU) is described as the extent to which potential adopters perceive the use of the new system or technology will require less or little effort in

accomplishing their aims (Davis, 1989). Wang (2003) finds that besides PU, PEOU is also a strong predictor of intention to use indicating that the straightforwardness of a system will increase its likelihood of adoption and use by a country's citizens.

Hence, in order for a new system, such as the e-filing system in Nigeria to be more generally adopted, taxpayers must find the system to be easy to use, with as little effort and little computer knowledge as possible. Any innovation that is easier to use will be less intimidating to the user (Moon and Kim, 2001). It is worthy to note that if the e-filing system is easy to use, there will be an increase in the interest of taxpayers in using it. According to the research carried out by Novindra and Rasmini (2017), perceived ease of use was found to have a positive impact on the interest of taxpayers in using the e-filing system. Since the introduction of the e-filing system in Nigeria is to bring about efficiency and effectiveness of tax administration and to replace the old system of filing taxes, taxpayers will expect the system to be useful compared to the manual process of filing. However, it is crucial to utilise this construct when investigating the intention of the taxpayers to adopt the e-filing system in Nigeria.

One of the objectives of introducing e-filing in Nigeria is to ease taxpayers' effort in filing their tax returns. Individual and corporate bodies prefer a system that will be easy to use and less expensive to adopt. Ease of use also concerns the time it will take the taxpayers to remit their tax returns using the new technology. In Malaysia, it has been found that the e-filing system significantly decreases the time for submission of tax returns as compared to manual filing (Ibrahim, 2014). Wang (2003) finds that PEOU is a strong predictor of intention to use the e-filing system in Taiwan. Abdul-Manaf et al. (2010) and Suki and Ramayah (2010) also find that PEOU is a significant predictor of e-filing usage in Malaysia. Sokobe (2015) found that PEOU significantly influenced the intention of small and medium enterprises to adopt the electronic payment system. In another study, Cho and Sagynov (2015) concluded that found PEOU positively and directly impacted the user's intention to apply e-commerce.

Additionally, Lai (2016)'s Malaysian research showed that PEOU has a significant influence on user intention to utilise a single platform e-payment system. Similarly, results from a Mauritius research by Chittoo and Dhotah (2016) on electronic tax filing revealed the remarkable effect of PEOU on the intention to use e-filing tax system. In addition, Kalinic and Marinkovic (2016) confirmed a significant positive direct relationship linking PEOU with the intention to use electronic commerce. This is in line with the suggestion by Moon and Kim (2001) that any innovation that is easier to use will be less intimidating to the user. Based on the above discussion, a hypothesis was developed as follows:

H3   There is a positive relationship between taxpayers' perception of ease of use of the e-filing system and their intention to use it.

2.7   *Perceived usefulness and perceived ease of use*

PEOU and PU may be described as factors that determine the use or acceptance of the technology. Currently, according to the FIRS, the use of e-filing is voluntary for the taxpayers. As such, the adoption of this system depends on the willingness of taxpayers and how easy it is to use. This implies the usefulness of a particular system determines its adoption. The TAM also states that the usefulness of a system is determined by the ease

of use of that particular system (Venkatesh and Davis, 2000) Hence, ease of use and usefulness can complement each other to make taxpayers adopt the e-filing system.

According to Azmi et al. (2012), PU and PEOU are positively significant with the intention to adopt the e-filing system. However, their studies disagree with the fact that ease of use has a positive impact on usefulness. The study demonstrates that ease of use does not mean that technology is useful to taxpayers. In a study conducted by Ozgen and Turan (2007), it is revealed that PU and PEOU have a positively significant influence on behavioural intention to use the e-declaration system at 1% and 5% levels of confidence. Moorthy et al. (2014) and Riquelme and Rios (2010) find that PU and PEOU are positively and significantly related. However, Hu et al. (1999), find in their study, that there is no significant relationship between PU and PEOU. They justify that this might be as a result of environmental factors, such as the number of population/users, quality of access to the internet, and level of infrastructural facilities available. Since many of the previous studies found a positive relationship between perceived usefulness and perceived ease of use, the following hypothesis was developed:

H4   There is a positive relationship between taxpayers' perceived usefulness and perceived ease of use of the e-filing system.

3   Methodology

This study employs a quantitative method to conduct this research. The quantitative method paves the way for the collection of data using a questionnaire. It generates numerical data that can thereafter be converted into numbers. A quantitative study can work with a large population, thus making it possible to generalise the results of the study (Zikmund et al., 2013; Sekaran and Bougie, 2016). The questionnaire was developed using a 5-point Likert scale. It comprises two sections: A and B. Section A consists of demographic information of the respondents; while Section B consists of questions on the intention to use and the three independent variables of TR, PU and PEOU. The questionnaires were adapted from Parasuraman (2000), Davis (1989), Taylor and Todd (1995) and Venkatesh et al. (2003). Table 1 shows the theory and sources of variable measurement utilised in this study. The respondents for this study comprise a sample of self-employed personal income taxpayers in Lagos, Nigeria. Self-employed taxpayers were selected as respondents in this study due to their late adoption of the e-filing system (which probably due to less awareness, low IT technical know-how and less budget) as compared to corporations that have enough expertise to adopt the system easily. The study chose Lagos because it is the major commercial hub with the second largest population in Nigeria and with the highest number of self-employed individuals in the western part of Nigeria.

The random sampling design was used to select several respondents from each local government area of Lagos State. Data were collected using a self-administered questionnaire between February and March 2016. The sample size selected totalled 250 self-employed taxpayers while the response rate received was 70%. The study by Alabede et al. (2011) in Nigeria had a 60% response rate. A study by Agbi (2014) which examined tax evasion problems by self-employed income earners, documents a 67% response rate. Therefore, the response rate of 70% for the current study is considered appropriate. In order to examine the relationships between the independent variables and

the dependent variable, correlation and multiple regression analyses were run using SPSS software. Before the conduct of the primary analyses, the study did a pre-test and pilot test. Pretesting was done to check for any glitches in the wording of questions and unclear instructions (anything that could delay the instrument's ability to collect data in a reasonable and systematic process), while pilot tests were done after pre-testing to check for the validity of the instrument. There were only minor adjustments in terms of the wording of the questions after the pre-test and pilot test. The pilot test confirmed that the instrument could be used for the study.

Table 1 Sources of variable measurements

Theories	*Variable measurement*	*Sources*
Technology readiness index	Technology readiness	Parasuraman (2000), Lin and Hsieh (2006) and Elliott et al. (2013)
Technology acceptance model	Perceived usefulness	Davis (1989), Taylor and Todd (1995), Mamta (2012) and Mustapha (2013)
	Perceived ease of use	Davis (1989), Taylor and Todd (1995), Wang (2003), Mamta (2012) and Mustapha (2013)

4 Findings and discussion

4.1 Background of respondents

Table 2 shows the demographic profile of respondents, which includes gender, marital status and type of business. The table indicates that 56% of the respondents are male, while 44% are female. It also demonstrates that the majority of respondents (nearly 75%) are married. Finally, the majority of respondents are sole proprietors (61.1%).

Table 2 Demographic information of respondents (n = 175)

Category		*Frequency*	*Percentage (%)*
Gender	Male	98	56.0
	Female	77	44.0
Marital status	Single	44	25.1
	Married	131	74.9
Type of business	Sole proprietorship	107	61.10
	Partnership	68	38.9

Table 3 shows the cross-tabulation between age and computer literacy. The result indicates that three out of four respondents aged below 20 years are computer literate. It also shows that out of 47 respondents between the ages of 21–30 years, 38 are computer literate, which is at a reasonably high level. The 31–40 years age group comprises 73 respondents of which 64 are computer literate. For the 41–50 years age group, out of 41 respondents, only one is not computer literate, and for the 51 years and above category, all the respondents have computer knowledge. Overall, this result shows that

only 20 (11.4%) respondents do not have computer knowledge, while the remaining 155 (88.6%) respondents have computer knowledge. It can be concluded that majority of the respondents (88.6%) are computer literate. This study concludes that taxpayers will not find it difficult to adopt the e-filing system.

Table 3   Cross-tabulation between age and computer literacy

	None	*Beginner*	*Intermediate*	*Advance*	*Total*
Below 20 years	1	1	1	1	4
21–30 years	9	21	15	2	47
31–40 years	9	30	30	4	73
41–50 years	1	18	14	8	41
51 years and above	0	7	3	0	10
Total	20	77	63	15	175

4.2   Reliability test results

Cronbach's alpha is used to measure the reliability or internal consistency of the instrument used (Piaw, 2012). According to Sekaran and Bougie (2016), reliabilities less than 0.6 are considered to be poor, those ranging from 0.6 to 0.7 are acceptable, and those over 0.8 are considered good. Results in Table 4 show that the instrument is reliable with Cronbach's alpha of more than 0.6 for all variables. In order to investigate whether or not all the variables are unidimensional, factor analysis is needed. In factor analysis, KMO, which measures shared variances, must not be less than 0.5, while the p-value of Bartlett's test of sphericity must be less than 0.001 (Beavers et al., 2013; Walker and Maddan, 2009). Multicollinearity is a situation in which two more descriptive variables are linearly related. A multicollinearity test is done to test if there is any relationship between the independent variables. If independent variables are more linearly related, it will lead to problems in multiple regression analysis, thereby making the impact of one variable on the dependent variable to be not distinguishable. In this case, VIF and tolerance were investigated. There is no multicollinearity problem if the VIF is less than 10 (Pallant, 2013; Hair et al., 2012; Sekaran and Bougie, 2016). Table 4 shows that there is no multicollinearity problem for this study.

Table 4   Reliability and assumption test

Variables	*Cronbach's alpha*	*KMO*	*Bartlett's test*	*Tolerance*	*VIF*
Technology readiness	.652	.633	0.000	.877	1.141
Perceived usefulness	.648	.682	0.000	.877	1.141
Perceived ease of use	.737	.787	0.000	.877	1.141
Intention to use	.759	.766			

4.3   Mean and standard deviation of variables

Table 5 shows the mean and standard deviation (SD) of variables. The variables were investigated based on a 5-point Likert scale. The findings indicate that the mean value of TR is 3.95 and SD of 0.46; the mean value of PU is 4.44 and SD is 0.37; the mean value

of PEOU is 4.34 and SD is 0.44, and the mean value of intention to use is 4.55 and SD is 0.44. The results indicate that on average, the respondents agree on all statements related to PU and PEOU. They also have a strong intention to use the system.

Table 5   Mean and standard deviation (N = 175)

Variables	Mean	Standard deviation
Technology readiness	3.9494	.45909
Perceived usefulness	4.4410	.36924
Perceived ease of use	4.3410	.43689
Intention to use	4.5471	.45909

4.4   Correlation analysis results

Table 6 shows the correlation matrix of the analysis. Correlation shows the strength of the relationship which exists between variables. Results show that a positive relationship exists between TR and intention to use the e-filing system, PU and intention to use the e-filing system and PEOU and intention to use the e-filing system. Also, a positive relationship exists between PU and PEOU. In the investigation of the relationship between PU and PEOU (H3), the result suggests that there is a significant positive relationship between the two variables. This result is in line with Lin et al. (2007), which indicates that a positive relationship exists between TR and intention to use. Furthermore, also in line with the study by Azmi et al. (2012), which states that a significantly positive relationship exists between PEOU and PU. However, this is not in tandem with the work of Hu et al. (1999) that there is no relationship between PEOU and PU, which could be attributed to poor access to the internet connection, the high number of population or user of the system and inadequate infrastructural facilities.

Table 6   Correlation matrix (n =175)

		Intention to use	PU	PEOU
Intention to use	Pearson correlation	1.00		
	Sig (2-tailed)			
Technology readiness (TR)	Pearson correlation	.274*		
	Sig (2-tailed)	.000		
Perceived usefulness (PU)	Pearson correlation	.244*	1.00	
	Sig (2-tailed)	.001		
Perceived ease of use (PEOU)	Pearson correlation	.489*	.351*	1.00
	Sig (2-tailed)	.000	.000	

Note: *Correlation is significant at the 0.01 level.

4.5   Regression analysis results

In order to investigate which factors influence the intention to adopt the e-filing system in Nigeria the most, multiple regression analysis was carried out. Table 7 shows the coefficient or weight of regression, which was used to investigate the significant factors. Mainly, H1, H2 and H3 were examined, and the results are presented in Table 7. Table 7

shows that although there are positive relationships between TR and intention to use, PU and intention to use and PEOU and intention to use, only PEOU (with highest beta of .425 and t-value of 5.975) is a statistically significant factor which can influence the intention of the self-employed taxpayers in Nigeria to adopt the e-filing system. The results indicate that the current study supports H1 and H3 but not H2.

Table 7   Coefficient or weight of the regression

Variables	Unstandardised (Beta)	Standardised (Beta)	t-value	Sig.
(constants)	1.262		2.504	.000
Technology readiness (TR)	.241	.165	2.447	.015
Perceived usefulness (PU)	.089	.071	1.021	.309
Perceived ease of use (PEOU)	.447	.425	5.975	.000
PEOU → PU	.415	.084	4.933	.000

Note: Dependent variable – intention to use.

The result for H1 is in line with the study of Lin et al. (2007), which document that a positively significant relationship exists between TR and intention to use. As stated, the TR construct consists of optimism, innovativeness, discomfort, and insecurity. The implication of the H1 result is that, the more the taxpayers have confidence and technical know-how about the system, the more they would adopt it. In addition, the comfort and security of taxpayers while using the system is of utmost importance to its adoption. The result for H2 in this study is different from previous studies, as discussed in Section 2.5. The result suggests that currently, the adoption rate of the e-filing system among self-employed taxpayers in Nigeria will not be affected by the usefulness of the system.

However, the result for H3 is in tandem with most previous studies, see for example, (Wang, 2003; Abdul-Manaf et al., 2010; Suki and Ramayah, 2010; Moon and Kim, 2001) which have found that PEOU is a significant determinant. The result of H4 as supported by this study implies that easiness of the system would make the taxpayers see the usefulness of it and vice versa. The result of H4 is in line with the study of Azmi et al. (2012). However, the adoption rate may be influenced by the perception of whether or not the system is easy to use. This implies that the usefulness of a system does not matter if the usage is difficult. Taxpayers in Nigeria need a system that is free of effort in order to achieve the main objective of the e-filing system, which is to increase the efficiency and effectiveness of tax administration. Right now, the taxpayers may not still be able to imagine the benefits to be accrued from the e-filing system, being more concerned with whether or not it is easy to use the system.

The result is probably due to the respondents of this study, not being e-filing users yet. Therefore, their judgement is mainly based on what they have experienced, such as problems with the available infrastructure for e-filing (such as electricity and internet) in Nigeria, which to their mind will make the use of the system to be costly and difficult. The results suggest that the government needs to improve the infrastructure and formulate strategies to educate and train taxpayers on how to use the system first before highlighting the benefits of the system to the taxpayers.

5   Conclusions

The e-filing system is a system that aims to increase the effectiveness and efficiency of the tax administration. This study is conducted to examine the factors that influence taxpayers' intention to adopt the e-filing system by focusing on TR, PU and PEOU. From the questionnaire and multiple analyses, the study finds that there is a significantly positive relationship between PEOU and taxpayers' intention to adopt the e-filing system (H3). However, the current study fails to find any significant relationship between PU and the intention to use the e-filing system in Nigeria (H2). From the correlation analysis, the study also finds that there is a significantly positive relationship between PU and PEOU (H4). The results are probably due to the e-filing system in Nigeria still being in its infancy stage.

The results also imply that taxpayers need a system that will be hassle-free to avoid incurring extra costs if the system is not efficient, like payment for internet services and the system taking too much time for filing which can lead to a reduction in productivity. It is suggested that the government improve the e-filing facilities and ensure that adequate education and training on e-filing are provided. The related e-filing website should be user-friendly and easy to navigate. In order to motivate the taxpayers, support services should be made available to handle taxpayers' inquiries if they come across problems when filing their returns. These support services should be available all the time since the system is designed to operate 24 hours a day. As this study is a preliminary work in Nigeria, the focus of this study is only to examine TR, PU and PEOU as determinants of the adoption of the e-filing system by self-employed taxpayers in Lagos State. It is recommended that future researchers include other factors that may influence the intention of the taxpayers to adopt the system and also to widen the scope of the study to include other areas. Other methods of data collection, such as interviews, may also be considered to enhance the knowledge on whether the taxpayers will be willing to adopt the e-filing system.

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