

1-1-2019

The Need for Green Companies in Nigeria: A Study of Electronic Invoicing

Sunday Adewale Olaleye

University of Oulu, sunday.olaleye@oulu.fi

Ismaila Temitayo Sanusi

University of Eastern Finland, ismails@uef.fi

Follow this and additional works at: <https://digitalcommons.kennesaw.edu/ajis>

 Part of the [Management Information Systems Commons](#)

Recommended Citation

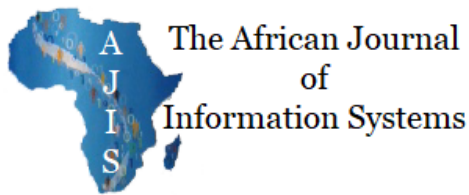
Olaleye, Sunday Adewale and Sanusi, Ismaila Temitayo (2019) "The Need for Green Companies in Nigeria: A Study of Electronic Invoicing," *The African Journal of Information Systems*: Vol. 11 : Iss. 1 , Article 1.

Available at: <https://digitalcommons.kennesaw.edu/ajis/vol11/iss1/1>

This Article is brought to you for free and open access by DigitalCommons@Kennesaw State University. It has been accepted for inclusion in The African Journal of Information Systems by an authorized editor of DigitalCommons@Kennesaw State University. For more information, please contact digitalcommons@kennesaw.edu.



Coles College of Business



The Need for Green Companies in Nigeria: A Study of Electronic Invoicing

Research Paper

Volume 11, Issue 1, January 2019, ISSN 1936-0282

Sunday Adewale Olaleye
University of Oulu
sunday.olaleye@oulu.fi

Ismaila Temitayo Sanusi
University of Eastern Finland
ismails@uef.fi

(Received February 2017, accepted May 2018)

ABSTRACT

Manual invoicing is a major business document that the supplier uses to request payments from a purchaser for services rendered. It contains the contact information of the seller, the list of goods or the services provided and the payment instructions. Attention is being shifted from manual invoicing these days because of some factors like increased man-hours, risks of human error and risks of high carbon footprint. The study applied Unified Theory of Acceptance and Use of Technology (UTAUT) to investigate the need for green Companies in Nigeria. Empirical data were collected from Nigerian companies to measure intention-behavior for electronic invoicing and structural equation modelling was used for data analyses. This study provides some useful guidelines for industry players such as the e-invoicing service providers (EISPs), policy makers and the marketers. With the newly integrated framework, a greater level of comprehension can be achieved about e-invoicing acceptance among Nigerian companies.

Keywords

Electronic invoicing, adoption, green companies, technology literacy

INTRODUCTION

Nigeria has been passing through the processes of radical shifts in its economy as a 55-year-old independent nation on the continent of Africa. Perhaps the most radical were the fundamental changes in the information and communications technology, the primary objective of which was to strengthen the Nigerian companies' potential. The aim of improving business processes and increasing the efficiency of the supply chain is paramount in companies over the years. Organizations invest in technologies to optimize their business performance. The emerging electronic business domain is taking a new

dimension and attracting business owners to invest and partake in the massive benefits associated with modern technology. Manual invoicing is a major business document that the supplier uses to request payments from a purchaser for services rendered. It contains the contact information of the seller, the list of goods or the services provided, and the payment instructions. Manual invoicing is commonly used in Nigerian companies due to the understanding that manual invoices cannot crash or be hacked. While this is true, the manual invoices booklet can still be misplaced or destroyed if exposed to destructive agents like water or various human activities. It can also be forged or manipulated thereby suddenly turning the company in question into a debtor as there is usually no evidence of sales since there is no back-up to such a vital document to refer to when the need arises.

Attention is gradually being shifted from manual invoicing due to factors such as increased man-hours, risks of human error, and the potential for a high carbon footprint. Nigeria has registered approximately 3.5 million companies (Corporate Affairs Commission, 2005; Alao, 2013) and 17 million unregistered businesses (Babatunde, 2016), which indicates that these companies will be causing high greenhouse gas emissions via manual invoicing, which is environmentally hazardous to human health. To accentuate the effects of this carbon footprint, America proposed a “carbon tax” intended to encourage companies to reduce their total emissions in addition to a “cap-and-trade legislation” limiting what companies can reach (The Wall Street Journal, 2009). This regulation shows the sensitivity of global countries to the effect of a carbon footprint, to which Nigeria is not an exception. The bottleneck syndrome of manual invoicing calls for e-invoicing, which over the past few years has seen a surge in replacement of manual invoicing across many organization sizes globally. In manual invoicing, all procedures are carried out manually from account payables (AP) to account receivables (AR), while in e-invoicing the processes are all automated. The e-invoicing cycle has reduced the lengthy, rigorous, and time-wasting process that is common with manual invoicing. E-invoicing is becoming a household name in the business sector due to its capability of being used as evidence of goods sold and payment. Beyond this, e-invoicing is a governing document that is crucial because of its importance in auditing. The procedure for manual invoicing is quite expensive and extensive, even if the supplier and the purchaser are using partial automation.

The reduction of timing, cost, and space during supply transactions is possible with the adoption of e-invoicing in Nigerian companies. The result will effect both suppliers and buyers, as well as providing job opportunities to new start-up companies through e-invoicing service providers. The objective of the study is the companies’ behavioral intention to adopt e-invoicing in Nigeria. This intent is two folded; to determine the benefits of e-invoicing to Nigerian companies and to determine the possible challenges of e-invoicing adoption. To achieve these objectives, we administered a questionnaire regarding related constructs to Nigerian companies. The responses to these research questions help to contribute and improve the theoretical and practical understanding of the factors that drive and inhibit the e-invoicing adoption of Nigerian companies.

BACKGROUND

The dawn of accelerated technologies coupled with the challenges of the time factor in processing invoicing has contributed to changes in AP and AR procedures. This revolution has given birth to e-invoicing, which is one of the topical issues at present (Kathrin Kuehne, Lubov Kosch and Angelica Cuylen, 2015; Kevin Poel., Wim Marneffe and Willem Vanlaer, 2016; Stanislav Kreuzer, 2017). E-

invoicing is a disruptive technology to manual invoicing, and it is allowing companies to reduce the paper they handle in the AP and AR departments. The behavioral intention to adopt e-invoicing in Nigerian companies is necessary for the disintermediation of human intervention and the improvement of the customer relationship.

This study is about invoicing, with a focus on e-invoicing in Nigerian companies. Nigeria was chosen because it is a large African country with much potential for developing the invoicing processes. According to Corporate Affairs Commission (2005), Nigeria has over “600,000 companies,” “1.5 million business names,” and “24,000 incorporated trustees.” Alao (2013) reported that CAC had registered 1.271 million business in 2013, while Babatunde (2016) added that 17 million SMEs do not have their businesses registered. Based on the observation of the authors and past work experience in Nigeria, invoicing systems can be categorized into three groups: traditional invoicing, e-invoicing, and mixed invoicing (a combination of traditional and e-invoicing). The first and the third options are common with small and medium-sized companies, while the second option is currently rare in Nigerian companies.

Traditional invoicing refers to the process of sending a physical paper invoice from the seller to the buyer (Kommerskollegium, 2010). Company “A” prepares an invoice with the mode of payment and sends the paper invoice to company “B” either by post or through dispatch rider. Company “B” receives the invoice, approves it, and pays the stipulated amount of money within the specified time before filing the invoice. While traditional invoicing usage is common in Nigerian companies, e-invoicing has a wider margin. In a Nigerian company, the AP department prepares two copies of invoices in a booklet with the help of a carbon paper, which an authorized person has signed. The invoicing booklet has the invoice number, date, product descriptions and amounts, company’s address, billing address, and terms of payment (between 21 to 31 days). The department issues the original copy of the invoice to the buyer and keeps the carbon copy for accounts and bank reconciliation. If an invoice remains unpaid at the due date, a reminder can be sent to the buyer. If this does not work, the company can involve law enforcement agents or turn the matter over to litigation. According to Adam (2007), small and medium-sized companies stick tenaciously to manual invoicing due to the fear of investment in the new software of e-invoicing and the agitation of re-engineering their existing system. Adam (2007) used Accountis in the United Kingdom as a case study to allay the fear of small and medium-sized companies. He described Accountis as a based payment systems provider that introduced Electronic Business Printer (ebPrinter) to small companies in Europe.

Adam (2007) stated that this printer has the potential of electronic signature and the facility for sending invoices through any application. The users of ebPrinter can use their existing accounting software, but they can only use ebPrinter to print instead of their regular printing machine. EbPrinter generates PDF or XML files which can be sent by email or through a secure web page. The solution suggested by Adam (2007) could relieve small companies of the fear of tampering with their existing system due to the compatibility of Accountis’ electronic business printer with any accounting software. Also, as it is cost effective, it may be affordable for small companies, which would help them overcome problems inherent in using manual invoicing. Though manual invoicing is the precursor of e-invoicing, its presence did not diminish the inevitability of its several benefits to the organization. In contrast to manual invoicing, e-invoicing has a structured data format with an added advantage of integration between business-to-business (B2B) partners, the interaction between the company and the invoicing application. Salmony and Harald (2010, p. 372) defined e-invoicing as “the sending or making available of an invoice and its subsequent storage wholly by electronic means.” To standardized e-invoicing

format, the data in the e-invoicing must be structured in such a way that the sender and the receiver can process it automatically. The paper invoice becomes an e-invoice when the AP department receives the invoice directly into their accounting system electronically. Some companies are using the e-invoicing through stand-alone e-invoicing applications. However, these are not interoperable because the consumer or the buyer at the receiving end does not have the facility for receiving e-invoicing. The company with e-invoicing software prints out the invoice and either delivers it by hand, posts it to the customer, or sends it as a PDF file via email. Korkman et al. (2010) confirmed that printing and mailing invoices are a common practice in major companies. Governments, several multinational companies, and a few national companies are using enterprise resource planning (ERP) software by Oracle, SAP, or Microsoft. Liping et al. (2008) confirmed that many companies had used much of their resources to get ERP. The popular modules currently in use are Financial Accounting (FI), Controlling (CO), Human Resources, Customer Relationship Management (CRM), and Project Management. ERP use has paved the way for electronic data interoperability, which, in turn, supports adopting electronic data interchange (EDI) (Tenhunen and Penttinen 2010). This is a prerequisite for direct e-invoicing between companies. Salmony and Harald (2010) emphasized the need for companies to invest in payments and accounting systems that support ERP. According to them, ERP systems have the facility of generating e-invoices for transactions between the buyer and the supplier.

It is estimated that 33 billion invoices are being exchanged within European countries while 350 billion are being sent worldwide on an annual basis. Surprisingly, it is only 12% of the total invoice volume between business-to-consumers exchanges and 18% of invoice volume between business-to-business exchanges that is being processed electronically (Koch 2012). These statistics implies that 88% of the total B2C and 82% of the B2B volume are being published and processed manually. Regarding the small and medium-sized enterprises (SMEs), manual invoicing and exchanging invoices via electronic mail is a common phenomenon (Koch 2012). Though e-invoicing is gaining popularity in Nigeria, facts and figures reveal that most of the companies are still using manual invoicing nationally. Different businesses are springing up and growing rapidly in Nigeria as the need for e-invoicing arises and the problems of using manual invoicing are becoming a reality. According to Worldometers (2018), the population in Nigeria as of April 2018 was 195 million. Concerning Nigeria's crowd, processing invoices manually is time-consuming and financially challenging. Using manual invoicing in Nigeria is complex because of its inherent workload, financial involvement, market competition, and a desire to satisfy customers. To overcome the problems of manual invoicing, companies in Nigeria can switch to paperless technology that will enhance the workflow of the supply chain. Other challenges of manual invoicing include a need for storage space and improper indexing. It is noted that the time between sending the invoicing and receiving payment is long when using manual invoicing. Korkman et al. (2010) emphasized that time consumption during the processing of manual invoices increases the number of workers that are involved in the manual invoicing chain.

Tieto (2011) supported IFS (2010) on the costly error of manual invoicing and stated that some companies in a developing economy are still using manual processes that are time-consuming, expensive, and prone to errors in their supply chain. In this circumstance, e-invoicing has a great potential of saving cost over traditional paper-based invoicing (Lempinen and Penttinen 2009). The general research questions for the study are thus formulated as:

- Why is electronic invoicing an antecedent of eco-friendly business in Nigeria companies?

- How is electronic invoicing adoption affecting the economy, environment, and society? How can its non-adoption prevent eco-friendliness?

Global Adoption of E-invoicing

E-invoicing applications and adoption around the world varies widely as countries with the highest level of adoption typically face government-mandated e-invoicing use either for tax compliance purposes or to improve the efficiency of business-to-government (B2G) transactions. In countries without government mandates, companies typically drive adoption to improve efficiency, lower the costs of AR/AP processes, and to gain other benefits from e-invoicing (Federal Reserve Bank of Minneapolis, 2016). Industry experts in 2015 estimated that about 500 billion bills/invoices (including consumer, business, and government) would be generated globally while of this 500 billion, only 42 billion or 8.4 percent are estimated to be exchanged electronically (Koch, 2015). In Europe, for example, only 24 percent of invoices were exchanged electronically in 2014; however, with regulatory initiatives in place, it is expected to accelerate to 95 percent by 2024. By comparison, U.S. e-invoicing adoption is similar to Europe at about 24 percent (6.8 billion of about 30 billion invoices), Koch (2015), growth is expected to be much slower at 5 percent annually or less. Thus, by 2024 only 38 percent of U.S. invoices are estimated to be exchanged electronically (Global E-invoicing report, 2014).

Approximately 58 percent of all invoices in Latin America were sent electronically in 2014 compared to 1 percent a decade earlier (FRBM, 2016). Brazil, Mexico, and Chile are world leaders in e-invoicing adoption due to government mandates enforcing value added tax (VAT) compliance. Brazil has the highest adoption rate globally (>90 percent) in the B2B and B2G markets with certain business processes having transitioned to the paperless solution in 2011. Mexico mandated e-invoicing in 2014, while Chile mandated the same from large companies in late 2014 and compliance by small and mid-sized companies by 2018 (Koch, 2015). Non-compliance with e-invoicing mandates is considered tax evasion and, depending on the country, can translate into significant fines and even jail time (FRBM, 2016). In Europe, the status of adoption varies by country, with Nordic countries having the highest level of adoption and Eastern Europe having the lowest. In Europe, an estimated 24 percent of all B2B and B2G invoices were sent electronically in 2014, compared with 6 percent in 2004 (Global E-invoicing report, 2014). In several countries, e-invoicing is mandated for B2G transactions but, in contrast to Latin America, not for B2B transactions. Early adoptors of e-invoicing in Europe include Denmark, Finland, Norway, Sweden, Slovenia, Austria, Switzerland, Italy, and Spain. Consequently, these countries also have the highest numbers of e-invoices exchanged electronically in Europe. The European Commission (EC) identified e-invoicing as an opportunity as early as 2002, and in 2005 made it part of the eEuropean Action Plan (eEurope 2005: An information society for all) as part of an effort to digitalize the procurement process and encourage SMEs to “Go Digital” (FRBM, 2016).

Rough estimates suggest that the U.S. generates as many as 25 billion invoices annually and exchanges only about 25 percent of these electronically (FRBM, 2016). Thus, the opportunity is significant to improve productivity and save costs in the U.S. through widespread adoption of e-invoicing. Adoption of e-invoicing in North America is driven primarily by large companies looking to automate their AR and AP processes to gain efficient benefits, fast processing, and low costs. In the United States and Canada, approximately 24 percent of all invoices were sent electronically in 2014, compared to 15 percent in 2004, and it is only expected to grow to 38 percent by 2024 (Global E-invoicing report,

2014). Though the overall adoption rate is the same as in Europe, the growth rate of adoption is significantly behind that of Europe and Latin America due, in part at least, to a lack of government mandates such as tax compliance, or broad, coordinated private industry-led efforts.

According to FRBM (2016), in the Asia-Pacific region e-invoicing adoption is currently at different stages, with several countries such as Korea and Singapore requiring e-invoices to facilitate and improve tax collection. Hong Kong and Taiwan do not have mandates in place but have seen significant e-invoicing adoption in certain industries to help enable trade. Other countries like Australia and Vietnam are exploring the whole economy approaches to e-invoicing and have piloted e-invoicing initiatives. Then, there are countries such as China and Japan, where the government either does not permit e-invoicing or only with special approval. From the above e-invoicing comparison, we can deduce that countries with the highest rate of e-invoicing adoption are subject to government mandates intended to improve tax compliance and revenue collection more often than efficiency, cost savings, or other benefits that businesses may seek. Also, the main driver of worldwide e-invoicing adoption after national mandates is the possibility of tangible benefits, typically productivity gains and cost savings exceeding implementation costs. Additionally, large companies are much more likely to adopt e-invoicing than SMEs as they process higher volumes of invoicing. This development indicates that big companies with access to ICT tools such as ERP to support the implementation of e-invoicing stand the chance to benefit from invoicing automation.

According to Koch (2015), most countries in Africa are in the evolution phase of e-invoicing adoption. There is no acknowledged government mandate in place amongst African countries. Instead, larger companies are driving this development to improve business efficiency (FRMB, 2016). Lack of adequate research on e-invoicing in Africa and specifically in Nigeria, as against numerous studies carried out in European countries is a factor, may be responsible for the differences in the rate of its adoption in both economies. This highlights the presence of a fillable gap.

E-invoicing Adoption in Nigeria

In a developing economy like Nigeria, the adoption of e-invoicing for the benefit of businesses and society at large is diffusing at a slow pace. This simply means that, while electronic government, electronic banking, electronic purchasing, and electronic collaboration are growing, they require more effort to reach the peak. In fact, it is very much on par with countries such as Europe, where Harald (2009) opined that e-invoicing is growing rapidly due to the adoption by one million different establishments out of twenty-three million. Harald (2009) also suggested that the adoption rate of e-invoicing could be faster if all hindrances could be removed, though the management of this change in the existing system may be difficult to implement.

The use of electronic email, credit cards for shopping, and internet usage is growing among SMEs, but about 66.7% are still proposing to adopt the technology in the next three to five years. This development establishes the gap between the adopters and non-adopters of electronic business in Nigeria (Olatokun and Bankole 2011). This adoption is still at the infant stage in Nigeria (Saidi 2010, p. 2). According to Olatokun and Bankole (2011), poor infrastructural facilities and a lack of expertise and vision underscore the slow adoption of e-business in Nigeria. However, according to Ramburn and Belle (2011, p. 31), the lack of need for e-invoicing services, lack of interest, and lack of awareness can be traced to slow adoption of e-services in Africa.

Ma'aruf and Abdulkadir (2012, p. 3078) mentioned that the “high cost of equipment, integration and connectivity, lack of the legal frameworks” that is suitable for e-commerce implementation, and a lack of skilled people were among the factors that contribute to slow adoption of new technology in Africa. Olatokun and Bankole (2011) discovered that perceived benefits, the organization's activities, and knowingness are among the factors that contribute positively to the acceptance of electronic business, while finance is a major factor that preventing adoption of e-business. In the opinion of Teo and Ranganathan (2004), risk and cost benefit are contributory factors to the adoption of new technology. Olatokun and Bankole (2011) and Teo and Ranganathan (2004) mentioned the factors that can inhibit the adoption of electronic business and new technology, though the study tries to discover the factors hindering the adoption of e-invoicing. Nigeria has a serene and attractive business environment for domestic and foreign investors, and it seems possible that it has all that it takes to influence the adoption of e-invoicing in Nigerian companies. The literacy level in Nigeria is growing, and technology is advancing despite the limitation of infrastructural facilities such as expensive internet broadband (Olaleye, Sanusi, Ukpabi and Okunoye, 2018).

THEORETICAL FRAMEWORK

Unified Theory of Acceptance and Use of Technology (UTAUT) is a robust model proposed by Venkatesh et al. (2003) that intends to explain the relationship between performance expectancy, effort expectancy, social influence, and behavioral intention. Facilitating conditions, the fourth construct in UTAUT model was theorized as a direct measurement of user behavior but it is used as a direct determinant of behavioral intention in this study. This postulation is contrary to the original model of UTAUT because Venkatesh et al. (2003) and Lai et al. (2012) used facilitating conditions as a direct predictor of user behavior. Gender, age, experience, and voluntariness of use that Venkatesh et al. (2003) used to moderate the four key constructs on behavioral intention and user behavior were excluded due to the study's goal of measuring the direct relationship between performance expectancy, effort expectancy, social influence, and facilitating conditions with behavioral intention and because moderators were not being used in this study.

Taiwo and Downe (2013) argued that facilitating conditions hypothesized by Venkatesh et al. (2003) that were found non-significant had been found significant in some studies (Foon and Fah, 2011). According to Taiwo and Downe, (2013, p. 55), “The outcome of the relationship between the facilitating conditions and user behavior can be said to be inconclusive” due to these divergences. While there are many models proposed to study behavioral intention, the choice of UTAUT is due to its robustness and intensity to “outperform the eight individual models including the TAM model” (Taiwo and Downe 2013, p. 49, Carlsson et al. 2006, p. 3). Since this study focuses on companies' behavioral intention, the UTAUT model can also “explain the organizational acceptance of a technology” (Carlsson et al. 2006, p. 4). This similarity is a motivation to use UTAUT model. Another reason for using UTAUT for this kind of study is due to its extensive coverage of IT adoption (Qureshi and Anne, 2008). Though Taiwo and Downe (2013 p. 48) argued that UTAUT, despite its extensive use and validation, “the outcome of empirical studies has been inconclusive with respect to the magnitude, direction, and significance of the relationships amongst the model” though it “has been applied and empirically tested in different domains”.

Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003) is a

combination of eight theories: the Theory of Reasoned Action (TRA) Fishbein and Ajzen (1975, 1980), the Motivational Model (MM) Davis et al. (1992), the Combined Technology Acceptance Model and Planned Behavior Model (C-TAM-TPB) Taylor and Todd (1995a), the Innovation Diffusion Theory (IDT) Rogers (1995), the Technology Acceptance Model (TAM) Davis (1989), the Theory of Planned Behavior (TPB) Ajzen, (1991), the Model of PC Utilization (MPCU) Triandis (1980), Thompson et al. (1991) and the Social Cognitive Theory (SCT) Bandura (1986), Compeau and Higgins (1995b). The table below presents the eight theories of UTAUT and their core constructs (see Table 1 for detail).

Theory of Reasoned Action (TRA)	Core Constructs
Drawn from social psychology, TRA is one of the most fundamental and influential theories of human behavior. It has been used to predict a wide range of behaviors.	Attitude Toward Behavior Subjective Norm
Technology Acceptance Model (TAM)	Core Constructs
TAM is tailored to IS contexts, and was designed to predict information technology acceptance and usage on the job.	Perceived Usefulness Perceived Ease of Use Subjective Norm
Motivational Model (MM)	Core Constructs
A significant body of research in psychology has supported the general motivation theory as an explanation for the behavior. Several studies have examined motivational theory and adapted it for specific contexts.	Extrinsic Motivation Intrinsic Motivation
Theory of Planned Behavior (TPB)	Core Constructs
TPB extended TRA by adding the construct of perceived behavioral control. In TPB, perceived behavioral control is theorized to be an additional determinant of intention and behaviour.	Attitude Toward Behavior Subjective Norm Perceived Behavioural Control
Combined TAM and TPB (C-TAM-TPB)	Core Constructs
This model combines the predictors of TPB with perceived usefulness from TAM to provide a hybrid model.	Attitude Toward Behavior Subject Norm Perceived Behavioural Control Perceived Usefulness
Model of PC Utilization (MPCU)	Core Constructs
Derived largely from Triandis' theory of human behavior.	Job-fit Complexity Long-term Consequences Affect Towards Use Social Factors Facilitating Conditions
Innovation Diffusion Theory (IDT)	Core Constructs
Grounded in sociology, IDT has been used since the 1960s to study a variety of innovations.	Relative Advantage Ease of Use Image Visibility Compatibility Results Demonstrability Voluntariness of Use
Social Cognitive Theory (SCT)	Core Constructs
One of the most powerful theories of human behavior is social cognitive theory.	Outcome Expectations – Performance Outcome Expectations – Personal Self-efficacy Affect Anxiety

Table 1: Models and Theories of Individual Acceptance (Venkatesh et al. 2003 pp. 428-432)

Several researchers accept UTAUT as a robust model (Dulle and Minishi-Majanja 2011, Park et al. 2007) while others criticize its “relevance to the adoption of a new technology and future information systems research” (Pahnla et al. 2011, p. 25), Straub and Jones (2007, p. 2). For example, Im et al. (2011, p. 7) argued that Venkatesh did not “consider cultural factors in the UTAUT model which is important since the model cut across many countries.” Contrary to the critics of UTAUT, Park et al. (2007, pp. 196-197) stated that the UTAUT model “has been considered the most prominent and unified model in the flow of information technology adoption research with high robustness of the instruments regarding the key constructs”. Venkatesh et al. (2003) also explained that UTAUT is an important model that can help management be successful when planning to adopt a new technology.

UTAUT by Venkatesh et al. (2003), combined with constructs from other existing research, was used to

form theories for Nigerian companies’ intention to adopt e-invoicing. The authors decided to use UTAUT in this study due to its widely accepted model that has been used in many studies to discern benchmarks and predict models in technology acceptance literature (Kumar 2013, Chong 2013, Chu 2013, Sharma and Kumar 2012). It also helps in the proper understanding and interpretation of behavioral intention to accept or reject a newly introduced technology. Since behavioral intention to adopt e-invoicing is prominent in the discipline of “information systems.” The authors adapted it to measure the companies’ intention to adopt e-invoicing in Nigeria because “it is a definitive model that synthesized what is known and advances cumulative theory while retaining a parsimonious structure” (Al Mursalin, 2012, p. 16) and “its validation in a longitudinal study resulted to 70%” (Venkatesh et al. 2003, p. 471), which seems good for behavioral intention study as only 30% of the variance cannot be explained.

UTAUT explains that the adoption of information systems mainly depends on performance expectancy or perceived usefulness. The concerned person will consider the anticipated technology as the one that will improve his or her job performance. The second variable, effort expectancy, has also been equal to perceived ease of use in TAM which encourages the person that the inbound technology will be less cumbersome. The third variable, social influence, explains the influence of a third party on using the new technology. The fourth variable, facilitating conditions, explains the handiness of supports necessary to improve system utilization. UTAUT portrays performance expectancy, effort expectancy, social influence, and facilitating conditions as independent constructs, behavioral intention, and user behavior as dependent constructs, and gender, age, experience, and voluntariness of use as moderators of independent constructs (Venkatesh et al. 2003). As shown in Figure 1, the UTAUT model explains the user’s behavioral intention to use a technology and the subsequent user’s behavior. This theory consists of four key constructs in which performance expectancy, effort expectancy, and social influence have a direct relationship with behavioral intention while facilitating conditions relate directly with the user’s behavior. Gender, age, experience, and voluntariness of use are to moderate the impact of the four key constructs of behavioral intention and the user’s behavior (Venkatesh et al. 2003).

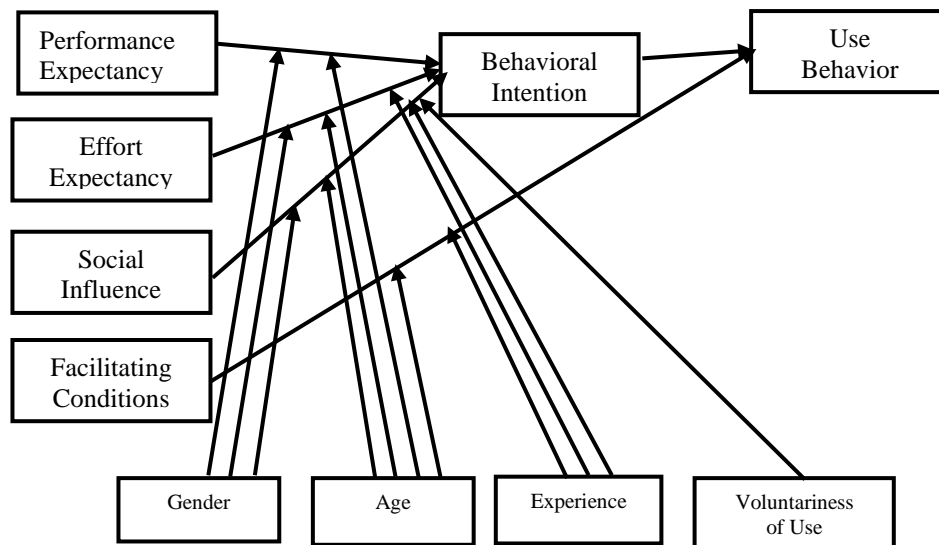


Figure 1: unified theory of acceptance and use of technology, (Venkatesh et al. 2003, p. 447)

The study adapted the UTAUT model to propose a new paradigm including image, anxiety, financial risks, and technology literacy to find out if the new proposed model will be uniform with the result of the previous studies on behavioral intention to adopt a technology and to follow up its result in the context of companies’ behavioral intention to adopt electronic invoicing in Nigeria.

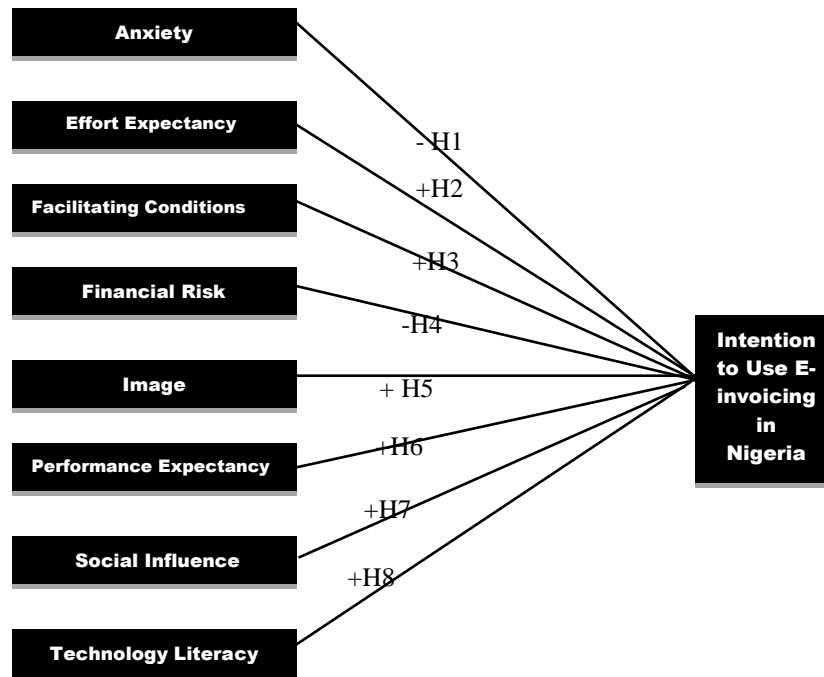


Figure 2: Research model and hypothesized relationships

Figure 2 presents the measurement for this study as a model of e-invoicing. The measure for performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), and behavioral intention (BI) were adapted from the model developed by Venkatesh et al. (2003). Technology literacy (TL) adapted from (Dyrenfurth, 1991), financial risk (FR) adapted from (Hassan et al. 2006), anxiety (ANX) adapted from (Compeau and Higgins 1995a and b), and image (IMG) adapted from (Moore et al. 1991) were added to the existing instrument developed by Venkatesh et al. (2003).

Hypotheses

In a follow-up to the study by Venkatesh et al. (2003), the authors begin the hypothesis with the UTAUT model and incorporate additional variables to extend the original theory. This section starts with a discussion of eight hypotheses relating to intention-behavior. The main dependent construct in this study building on the UTAUT is behavioral intention, which is defined as “the degree of companies’ willingness to use a system” (Venkatesh et al. 2003, p. 447). Independent and dependent variables as shown in Figure 2 were adapted to propose a new model. Below are the hypothetical statements of each construct:

Anxiety

Anxiety is “evoking anxious or emotional reactions when it comes to performing a behavior such as using a computer” (Venkatesh et al. 2003, p. 432). Compeau and Higgins (1995b, p. 189) said, “anxiety is an emotional reaction to computers.” Anxiety is defined “as the tendency of individuals to be uneasy, apprehensive, or fearful about current or future use of computers” (Parasuraman and Igarria 1990, p. 329). Leso and Peck (1992) supported the definition given by (Parasuraman and Igarria 1990, p. 329). According to Saadé and Kira (2009), using technology has a negative effect that may stir up phobia during intention to use it or in the process of interacting with computers. Saadé and Kira (2009) stated that anxiety is one of the factors that can influence the use of computers. Based on this proposition, the study proposed the following hypothesis:

H1: Anxiety (ANX) has a negative effect on companies’ behavioral intention to adopt e-invoicing.

Effort Expectancy

Effort expectancy is “the degree of ease associated with the use of the system” (Venkatesh et al. 2003, p. 450). The researchers stated that this construct is a combination of three constructs from the existing models such as perceived ease of use from the study of Davis (1989); Davis et al. (1989), complexity from Thompson et al. (1991), and ease of use from Moore and Benbasat (1991). The perception of ease in using e-invoicing will determine its adoption, and because it is essential for companies to consider this factor before adoption, the study proposed the following hypothesis:

H2: Effort expectancy (EE) has a positive influence on companies’ behavioral intention to adopt e-invoicing.

Facilitating Conditions

Facilitating conditions is “the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system” (Venkatesh et al. 2003, p. 453). This construct is a combination of perceived behavioral control (Ajzen 1991; Taylor and Todd 1995a, 1995b), facilitating conditions (Thompson et al. 1991), and compatibility (Moore and Benbasat 1991) from existing models. Assurance of after sales service from the e-invoicing service providers to the companies in Nigeria will aid the decision of the companies to accept e-invoicing. Therefore, the study hypothesized that:

H3: Facilitating Conditions (FC) has a positive influence on companies’ behavioral intention to adopt e-invoicing in Nigeria.

Financial Risk

Financial Risk is “a concern over any financial loss that might be incurred because of online shopping” (Hassan et al. 2006, p. 140). The authors infer from this definition that financial risk is the expectation of any loss or any adverse effect because of e-invoicing. Risk analysis is paramount before investment to prevent or minimize loss and is an important factor for consideration in adoption. Accordingly, the study hypothesized that:

H4: Financial Risk (FR) has a negative influence on companies’ behavioral intention to adopt e-invoicing.

Image

The image is “the degree to which use of an innovation is perceived to enhance one’s image or status in one’s social system” (Moore and Benbasat 1991, p. 195). Image is an effective key to identity and a tool of competition. The intending user of new technology would like to put this into consideration before adoption. Based on this proposition the study hypothesized that:

H5: Image (IMG) has a positive influence on companies’ behavioral intention to adopt e-invoicing.

Performance Expectancy e-invoicing user

Performance expectancy is defined by Venkatesh et al. (2003, p. 447) “as the degree to which an individual believes that using the system will help him or her to attain gains in job performance.” According to Venkatesh et al. (2003), performance expectancy is equal to perceived usefulness proposed by Davis (1989); Davis et al. (1989), extrinsic motivation by Davis et al. (1992), job-fit by Thompson et al. (1991), relative advantage by Moore and Benbasat (1991), and outcome expectations by Compeau and Higgins (1995b); Compeau et al. (1999). The intended e-invoicing user expects that it will be more useful than the existing manual invoicing. The study hypothesized that:

H6: Performance Expectancy (PE) has a positive influence on companies’ behavioral intention to adopt e-invoicing.

Social Influence

Social influence is defined “as the degree to which an individual perceives that important others believe he or she should use the new system” (Venkatesh et al. 2003, p. 451). According to Gruzd et al. (2012, p. 2347), “social influence plays an important role in one’s intention to use a technology.” Adopters can be influenced through socialization, persuasion, and aggressive marketing. The influence of the opinion leader and family member can also motivate behavioral intentions of the companies’ decision makers to adopt e-invoicing. Accordingly, the study postulates that:

H7: Social influence (SI) has a positive influence on companies’ behavioral intention to adopt e-invoicing.

Technology Literacy

Technology Literacy is a concept used to characterize the extent to which an individual understands, and is capable of using technology” (Dyrenfurth, 1991: p. 139). Dow (2006) defines it “as the acquisition of the skills necessary to make effective use of the various forms of technology encountered in the modern world.” Yawson (2010) refers to technological literacy as offering people the tools to “engage intelligently and conscientiously in the world around them.” Since the e-invoicing platform is both hardware and software-based, computer literacy is an essential factor that can contribute to the behavioral intention of adopting e-invoicing. Therefore:

H8: Technology Literacy (TL) has a positive effect on companies’ behavioral intention to adopt e-invoicing.

Behavioral Intention

Behavioural intention is the degree of companies' willingness to use a system (Venkatesh et al. 2003). Shroff et al. (2011, p. 602) presumed that behavioral intention "is an important factor that determines whether users will actually utilize the system" but Warshaw and Davis (1985, p. 214) defined behavioral intention as "the degree to which a person (individual) has formulated conscious plans to perform or not perform some specific future behavior." According to Walker and Pearson (2012), intention has been used in different models as a dependent variable to predict the technology adoption thus, the study employs behavioral intention as a dependent variable.

METHODOLOGY

The snowball approach was used (Averweg 2008, Okeke 2017) in this study. Due to the communal setting of Nigeria, snowball sampling was used to appraise 224 respondents from different companies in Nigeria. According to Illenberger and Flötteröd (2012), snowball sampling method is also called chain-referral or link-tracing. These first contact respondents are called the 'seeds' and they, in turn, refer to their "alters," the second contact respondents. This type of sampling approach is good in a network society. In Bryman and Bell's (2011) opinion, snowball sampling is possible when a researcher contacts groups of people that are relevant to the research topic and uses this contact to reach others. Vervaeke et al. (2007) explained the procedure of initiating snowball sampling and mentioned that the first stage is to make a general scout for the respondents and then follow it up with chain referrals. This indicates that initial respondents on the list will make a referral to others that can help in the survey. The next step is the quality control of the chain referrals, which involves monitoring and sanitizing the data.

The survey was created using relevant questions modified from related research. The survey consists of three parts. The first part includes the background questions of the companies. The second part deals with more specific questions on e-invoicing. The questions in the third part focus on e-invoicing acceptance as related to the participant's perception regarding e-invoicing. Five-point Likert scale was used in the questionnaire. These questions intend to examine behavioral intention of the companies to accept e-invoicing. Workers in leading positions in Nigerian companies were asked relevant questions about their intention towards e-invoicing adoption.

To have a valid questionnaire, the authors carried out a pilot test of the study in Nigeria. The data collected was input into the SPSS for preliminary reliability test, the results of which helped in the final questionnaire design. Participants were given adequate time to participate in the survey and the data gathering lasted a month.

262 companies representing different business sectors participated in the study. In total, the researcher received 224 filled-out questionnaires, 216 out of which were suitable for the analyses. The response rate of the physical survey was 81.5%. This indicates that the response rate of the survey was good.

Construct	Item	SFL	CR	AVE	CA
Performance Expectancy	PE1: EI can improve the effectiveness of doing business for my company.	.898	.886	.725	.898
	PE2: EI can improve the business productivity of my company.	.931			
	PE3: EI is a useful technology for my company.	.708			
Effort Expectancy	EE1: Learning to operate EI software would be easy for my company.	.856	.835	.630	.897
	EE2: It would be easy for my company to become skillful at using EI software.	.821			
	EE3: EI system would be flexible to implement and utilized.				
Social Influence	SI1: Business partners think my company should be use EI.	.695	.909	.769	.897
	SI2: In general, the business communities think my company should use EI.				
	SI3: People who are important to me think our company should use EI.				
Facilitating Conditions	FC1: Training would be available to my company for the use of EI software.	.894	.839		
	FC2: Specialized instruction concerning EI would be available to my company.				
	FC3: A specific person (or group) would be available for assistance with EI system difficulties in my company.				
Technology Literacy	TL1: My company has enough technology resources to support the use of e-invoicing.	.909	.926	.807	.898
	TL2: My company has some staff that has enough technology knowledge to utilize e-invoicing.	.891			
	TL3: The computer technology used in my company is good enough to utilize e-invoicing.				
Financial Risk	FR1: Adoption of e-invoicing by my company is financially risky.	.894	.918	.941	.841
	FR2: Using consultant to implement e-invoicing in my company is financially risky.				
	FR3: Using e-invoicing may encounter unreasonable charges.				
Anxiety	ANX1: My company will feel apprehensive about using EI system.	.917	.916		
	ANX2: E-invoicing system is somewhat intimidating to my company.				
	ANX3: My company is scared of losing a lot of information by using EI system.				
Image	IMG1: If my company uses an e-invoicing system, it will have more prestige than those who do not.	.728	.822	.607	.903
	IMG2: If my company uses EI system, it will have a high profile.	.839			
	IMG3: EI will be a status symbol in my company.				
Behavioural intention	ITU1: My company will adopt e-invoicing in the next 1 year.	.857	.863	.677	.903
	ITU2: My company will implement e-invoicing in the next 1 year.	.828			
	ITU3: My company will utilize e-invoicing in the next 1 year.	.829			
Image		.811	.917	.786	.898
		.890			
		.901			
Behavioural intention		.869	.946	.853	.904
		.916			
		.931			
		.925			

Validity and Reliability

Fornell and Larcker (1981) mentioned that convergent validity reveals how measurement of a construct relates theoretically. According to Fornell and Larcker, factor loadings should be significant and above their threshold of .7. Construct reliabilities should also surpass the verge of .8 and average variance extracted should exceed 0.5 (Fornell and Larcker 1981). SPSS 21.0 was used for reliability tests of Cronbach’s alpha (α), while Smart PLS 2.0 was conducted to extract factor loadings, composite reliability, and average variance extracted. In Table 7, all the factor loadings for the nine constructs were above the verge of .5. Composite reliabilities are greater than .7 and average variance extracted

conforms to the threshold of .5 (Bagozzi and Yi 1988). As described in Table 5, the Cronbach’s alpha (α) values ranges from .896 to .904, which are all above the boundary of .7. According to Tavakol and Dennick (2011, p. 53), “Cronbach’s alpha is an index of reliability,” which explains the degree in which all the analyzed variables measure the same thing. It also reveals the interrelationship of the items examined.

RESULTS

The Demographic Characteristics (DCs) of the respondents is presented in Table 5.

Variable	Classification	Frequency	Percentage%
Position	Junior staff	56	25.93
	Managerial staff	73	33.80
	Company Owner	39	18.06
	Owner and manager	30	13.89
	Others	18	8.33
Sector	Manufacturing	42	19.44
	Construction	12	5.56
	Estate Management	26	12.04
	Marketing	45	20.83
	Financial services	28	12.96
	Information Technology	19	8.80
	Others	44	20.37
Year in business	<1	9	4.17
	1-3	39	18.06
	4-6	41	18.98
	7-10	43	19.91
	>11	84	38.89
Annual revenue	< ₦200,000	11	5.09
	₦200,000 - ₦500,000	32	14.81
	₦501,000 - ₦900,000	26	12.04
	₦901,000 - ₦2,000,000	49	22.69
	>₦2,000,000	98	45.37
Staff strength	> 10	60	27.78
	11 – 50	52	24.07
	51 – 100	27	12.50
	101 – 500	31	14.35
	> 500	46	21.30
Computer experience	We Don’t Use Computer	38	17.59
	>1yr	30	13.89
	1-2	26	12.04
	3	22	10.19
	>3	100	46.30
Kind of business	B2B	25	11.57
	B2C	80	37.04
	Both B2B and B2C	111	51.39
Invoice Received	< 100	83	38.43
	101 - 300	38	17.59
	301 - 500	32	14.81
	501 – 700	8	3.70
	>700	38	17.59
	Not Applicable	17	7.81
Invoice Sent Out	< 100	75	34.72
	101 - 300	47	21.76
	301 – 500	24	11.11
	501 - 700	15	6.94
	> 701	36	16.67
	Not Applicable	19	8.80

Table 5: Demography Characteristics of the Companies

The descriptive statistics evident in table 5 reveal 25.9% of the respondents as Junior Staff, 33.8% as Managerial Staff, 18.1% as owners of the company, 13.9% as both the owners and the managers, while 8.3% fall into the other categories. This result indicates that managerial staffs are more represented in this study and followed by the owner of the company and that both the owner and the manager account for 32% altogether. Managerial staff, company owners, and owner, and manager, fall within the category of managerial staff. This accounts for 65.8%, while junior staff and 'other category' amounts to 34.2%. Based on this result, the study revealed that managerial staffs which are the decision and policy makers of the company are well-represented. It is an indication that the study targets the right representatives in the companies sampled that can take the decision based on their designation and authority concerning the issues that dwell on new technology. The marketing business sector has the highest frequency with 20.8%, followed by manufacturing with 19.4% and construction with the lowest frequency of 5.6%. The other category accounts for 20.4%, indicating that many other business sectors were not included in this study. Nigeria is the most populous African country and an attractive business centre. While it has many business sectors, the most significant ones are manufacturing, construction, and oil and gas. The business sectors used in this study partially represent the business sectors in Nigeria.

Among the sampled companies, 38.9% have more than 11 years of business experience, 19.9% have 7 – 10 years business experience, 19% have 4 – 6 years business experience, 18.1% have 1 – 3 years, and 4.2% have less than one year. This indicates that most of the companies have been in business for several years. More than two million-naira (₦2, 000,000) account for 45.4%, ₦901, 000 – 2,000,000 (22.7%), ₦501,000 – 900,000 (12%), ₦200,000 – 500,000 (14.8%), while less than ₦200,000 amounts to 5.1%. This indicates that about half of the companies sampled earned more than two million naira (₦2, 000,000) annually (1\$ = ₦360). With this companies' financial revenue, it seems these companies have the financial potential for e-invoicing adoption. Among all the companies sampled, less than 10 staff accounts for 27.8%, 10 – 50 (24.1%), 51 – 100 (12.5%), 101 – 500 (14.4%), and more than 500 (21.3%). The result reveals that small, medium, and large size companies are all part of the sample. In line with the study by Doguwa et al. (2010), the company staff strength is well-distributed in the context of Nigeria as small companies ranging from 1 to 49, medium from 50 – 199, and large from 200 and above. Based on this result, it is likely that there are small and medium companies in Nigeria than large companies.

In the sampled companies, 46.3% account for more than three years computer experience, 10.2% have three years computer experience, one to two years (12%), less than one year (13.9%) while 17.6% did not have any computer experience. This result indicates that 82.4% of the companies are computer literate. The table further reveals that B2B accounts for 11.6%, business to consumer (B2C) accounts for (37%) while both the B2B and B2C account for (51.4%) in the Nigerian business model. The results show that the combination of B2B and B2C types of business operation prevailed in Nigeria. 83 companies received invoices from other companies amounting to (38.4%), 100 – 300 (17.6%), 301 – 500 (14.8%), 501 – 700 (3.7%), 701 and above (17.6%), and not applicable (7.9%). This result reveals that many of the sampled companies received invoices from their suppliers, which, when compared with Outokumpu in Finland that processed 500,000 invoices yearly, indicates that incoming invoice volume is very low (Outokumpu, 2012, Olaleye, Salo and Ukpabi, 2018). 75 companies sent invoicing to other companies below 100 (34.7%), 100 – 300 (21.8%), 301 – 500 (11.1%), 501 – 700 (6.9%), 701 and above (16.7%), and 'not applicable' (8.8%). The category of 'not applicable' refers to the companies that are not sending invoices to other companies. This result reveals that most of the companies sampled are sending out invoices to their buyers.

Structural Model Assessment and Hypothesis Testing

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STERR)	Supported or not
ANX->BI	-0.1858**	-0.1865	0.0727	2.5541	Supported
EE -> BI	-0.0522	-0.0389	0.091	0.5742	No
FC -> BI	0.1194**	0.1175	0.0667	1.7904	Supported
FR -> BI	-0.1495**	-0.1523	0.0728	2.0543	Supported
IMG -> BI	0.211**	0.2007	0.079	2.6712	Supported
PE -> BI	0.0854	0.0935	0.0642	1.3176	No
SI -> BI	0.2229**	0.214	0.088	2.533	Supported
TL -> BI	0.145**	0.1517	0.0643	2.2562	Supported

*ANX – Anxiety, EE – Effort Expectancy, FC – Facilitating Conditions, FR – Financial Risk, IMG – Image, PE – Performance Expectancy, SI – Social Influence, TL – Technology Literacy, BI – Behavioural Intention.

Table 5: Result of the hypotheses test (**:p-value <0.01, *:p-value <0.05)

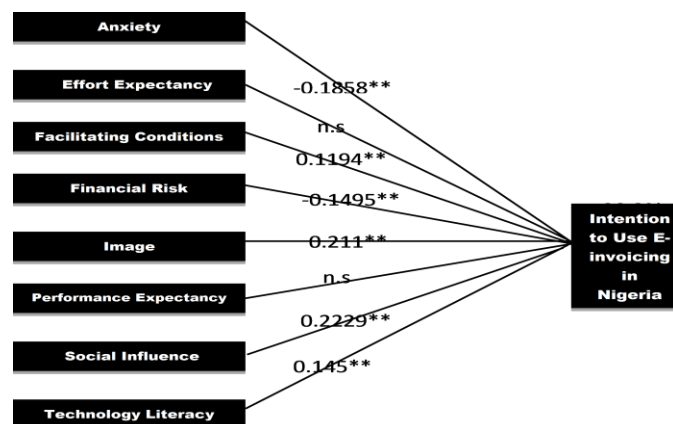


Figure 3. Results of Structural Model

Table 5 and Figure 3 provide a tabular description of the hypotheses tested, including path coefficients and variance explanation. Technology literacy significantly influences behavioral intention with TL -> BI $\beta = .145$ and $t = 2.256$, (table value is 1.96 $p < 0.05$) and image (IMG -> BI $\beta = .211$ and $t = 2.671$, $p < 0.01$). This outcome indicates that 100 points change in technology literacy will bring 14.5 points change in behavioral intention. The image is found to be the most influential predictor of companies' behavioral intention to adopt e-invoicing, and 100 points change in the image will bring 21.1 points change in the behavioral intention. Anxiety is negatively associated with behavioral intention. This result indicates that if the perception of anxiety is higher, the companies seem to have lower intention to adopt e-invoicing ANX -> BI $\beta = -.186$ and $t = 2.554$, (table value is 1.96 $p < 0.05$). Social influence also has a significant impact on behavioral intention (SI -> BI $\beta = .223$ and $t = 2.533$, $p < 0.05$). Financial risk and behavioral intention are negatively related. This exposition indicates that when the value of financial risk increases (predictor variable), the value of behavioral intention decreases (consequence variable) FR -> BI $\beta = -.150$ and $t = 2.054$ (table value is 1.96 $p < 0.05$). Also, facilitating conditions

influences behavioral intention (FC \rightarrow BI $\beta = .119$ and $t = 1.790$ $p < 0.1$). The proposed behavioral intention model is found to explain 29.3% of companies' adoption intention (for details, see figure 3).

DISCUSSION

The results reveal the significance of four drivers of e-invoicing: facilitating condition, image, social influence, and technology literacy, in addition to the two inhibitors anxiety and financial risk. Effort expectancy and performance expectancy were not found significant in this study. Surprisingly, performance expectancy and effort expectancy variables adapted from the UTAUT model did not have any considerable influence on companies' behavioral intention to adopt e-invoicing in Nigeria. Contrary to this result, these two variables have been corroborated by other studies to have influences on behavioral intention. This result is consistent with the study of Mandal and McQuen (2012), who extended UTAUT to explain social media adoption by micro businesses. However, performance expectancy and effort expectancy were not found consistent with the original UTAUT model proposed by Venkatesh et al. (2003). This can be explained that, in the context of Nigerian companies, the two constructs were found insignificant when examined. The result of performance expectancy did not conform to the former studies of Carlsson et al. (2006), Park et al. (2007), and Zhou et al. (2010), which indicated significant effects on user behavioral intention. On the other hand, with regards to effort expectancy, its insignificance was contrary to the result of the previous studies of Carlsson et al. (2006), Park et al. (2007), and Zhou et al. (2010). This indicates that Nigerian companies have not seen manual invoicing as a herculean task.

The financial risk hypothesis result was found negatively related to the intentions of this study and consistent with other studies where the measurement of financial risk was negatively significant (Eiser et al. 2002). This result can be explained by the somewhat lopsided risk taking in Nigeria, in which some business owners display risk aversion, particularly when the details of the functionality and operations of such businesses are not fully understood. Anxiety was found negatively related to the behavioral intention, which is in line with the study by Venkatesh et al. (2003). This result shows that in the Nigerian business context, the rate of fear of adopting a new technology, for instance, e-invoicing and the willingness to adopt e-invoicing support the hypothesis that anxiety will be an integral component of considerations in a possible behavioral intention to adopt e-invoicing in Nigeria. Social influence was found significant, which conforms with the previous studies by Carlsson et al. (2006), Park et al. (2007), and Zhou et al. (2010). This can be explained by the fact that in Nigeria, a communal society where networking and influence are based on cordial relationships, the influence of opinion leaders (e.g., union leaders in various capacities, politicians, and community leaders) will affect the behavioral intention to adopt e-invoicing. The recommendations from these various opinion leaders are very essential and cannot be underestimated.

The managerial implication is therefore the understanding of the possibilities of third parties to influence the decision of adopting e-invoicing. Surprisingly, while facilitating conditions have a direct relationship with the actual use behavior in UTAUT, in this study it was structured to measure the behavioral intention and was found significant. Facilitating conditions are one of the significant factors of companies' behavioral intention to adopt e-invoicing in Nigeria, the result of which is consistent with previous studies by Carlsson et al. (2006), Park et al. (2007), and Zhou et al. (2010). The positive result of facilitating conditions is due to the appreciation of Nigerian companies for services rendered and the promise for necessary support. Their reliance on the third party's assistance is paramount, as these kinds of commitments by service providers are great motivation. Efforts such as after-sales services, training,

and efficient customer service around the clock will complement the desire of companies to adopt e-invoicing

The image construct was found positively related to behavioral intention. The image implies status and is a symbol of competition in Nigeria. Privilege of customization of e-invoicing software should be the priority of electronic service providers. The possibility of integrating companies' trademark will facilitate the intention to adopt e-invoicing. E-invoicing adoption processes have gained remarkable ground in European countries. For instance, its awareness and adoption is growing steadily in Finland. Nordea Bank and e-invoicing service providers like Tieto are at the forefront of this crusade. The behavioral intention to adopt e-invoicing scenario in Nigerian companies is not at par with that of Finland because the adoption is being diffused to the level of micro companies in the latter country. It is indicated that e-invoicing service providers (EISP) have yet to make an impact on Nigerian companies. The publicity, awareness, and motivation for behavioral intention to adopt e-invoicing is still at the infant stage in Nigeria. Fear of the unknown, financial implication of adopting e-invoicing, and change resistance may be responsible for this attenuation (Olaleye and Sanusi, 2017). Also, the inability to discern the difference between manual and e-invoicing is a great challenge. Many companies misconstrue PDF and mail invoicing for e-invoicing, though, according to Salmony and Harald's (2010) definition, e-invoicing becomes obvious when the account payables or receivables can automatically receive the invoice directly into their accounting system.

THEORETICAL IMPLICATION

Theoretically, this study integrates technology literacy, anxiety, financial risk, and image (TAFI) with UTAUT to explain the companies' intention to adopt e-invoicing in Nigeria. The research found that, in addition to the technology perceptions such as social influence and facilitating conditions in UTAUT, technology literacy was found to be a significant factor for the first time (at least in the e-invoicing study). Anxiety, financial risk, and image also have a significant effect on companies' behavioral intention to adopt e-invoicing in Nigeria. This indicates that, when considering factors that are responsible for the intention to adopt e-invoicing, there is a need to look beyond UTAUT and to divert attention to the effect of technology literacy, anxiety, financial risk, and image (TAFI). Interaction between these variables deserves further examination. The results reveal that UTAUT is not sufficient to investigate companies' behavioral intention to adopt e-invoicing in Nigeria, but technology literacy, anxiety, financial risk and image (TAFI) can be added to UTAUT constructs to make it a robust combined model that better explains e-invoicing behavioral intention.

Companies will undertake risk analysis before investing. Companies do not want to invest in cumbersome systems with numerous complications. Electronic Service Providers should not ignore the risks associated with e-invoicing deployment and should design e-invoicing platforms with less risk features. Information technology consultants thus need to factor the risk implications of implementing e-invoicing while rendering their services. By implication, it behooves the e-invoicing service providers that are contemplating the introduction and deployment of e-invoicing in Nigeria to consequently understand that the behavioral intention to adopt e-invoicing, however beneficial it could be, will at the earliest stage of the introduction have a slight resistance due to the negative outcome of anxiety (Olaleye and Sanusi, 2017). Possible reasons for the negative anxiety position are not far-fetched. As a socio-cultural norm understandably not peculiar to only Nigerians, the rate of openness to change and uncertainties associated with the change generally heighten resistance. This norm affects Nigerians. By

implication, entrepreneurs with e-invoicing intents therefore will need to introduce e-invoicing in a subtle, non-drastring manner as a panacea.

This affords the targeted end users of the e-invoicing and related services the luxury of not having a phobia of trying a new technology, while at the same time enjoying its convenience and benefits. Furthermore, as an additional solution, the introduction and the use of the e-invoicing should be devoid of technical words and jargons so as not to discourage the users (Olaleye and Sanusi, 2017). The sparing use of such technical words will be beneficial. Lastly, the solution to reduce the level of anxiety is that electronic service providers should design robust e-invoicing platforms that are not vulnerable to attacks of virus and cyber hackers. Also, the policy makers in Nigeria should ensure the enforcement of cyber law to allay the fears of adopting e-invoicing by companies. This is another area of concentration for the marketers when planning their campaign for behavioral intention to adopt e-invoicing. The combined effort of Nigerian policy makers, opinion leaders, and e-invoicing service providers with their clearly stated benefits of e-invoicing through aggressive publicity and marketing will go a long way to facilitate the companies' behavioral intention to adopt e-invoicing in Nigeria. E-invoicing has great potential in the Nigerian market in the future because of the high computer literacy level. Nigerian companies need a lot of orientation and motivation for its adoption.

LIMITATION AND DIRECTION OF FUTURE STUDIES

The study shows the difference between the business sector distribution in percentage, which constitutes a limitation to this study. The marketing sector has approximately 20.8%, which was the highest followed by other sectors not stated in the questionnaire with 20.4%. The result was not evenly distributed among the business sectors and may represent one business sector more than the other. Also, the study only examined the intention to use e-invoicing without considering the actual usage of e-invoicing. Limitation in getting background information on e-invoicing in Nigeria and exclusion of government parastatal in the study also contributes to the limitation. It will be interesting if the future research could be carried out to investigate the behavioral intention to adopt e-invoicing in Nigerian companies based on different business sectors and extend the research to actual use of e-invoicing in Nigerian companies.

The future study will likely investigate the moderation of gender, age, experience, and voluntariness of use in relation to behavioral intention. The study of Carlsson et al. (2006) emphasized these mediators repeatedly. Despite the differences between this study and study of Venkatesh et al. (2003), the authors wished to examine UTAUT model to see if there could be any relevance of this model with the companies' intention to adopt e-invoicing. It will be interesting for future research to use the combined model to examine the behavioral intention to adopt e-invoicing signature, banking e-invoicing, and universities e-invoicing in developing countries. Hopefully, the perception of this integration will provide deeper insights. Practically, this study showed that technology literacy has significant effects on companies' intention to adopt e-invoicing. The result reveals that the companies sampled are computer literate and have been using computers for more than three years. The e-invoicing service providers are required to offer more add-on and plug-in features that will make the e-invoicing platform robust, easy to manipulate, and friendly to use. Speed, accuracy, and efficiency of the platform must also be put into consideration.

CONCLUSION

The significance of technology literacy in this study indicates that the Nigerian community to some extent could use technology for communication and collaboration in addition to creative thinking, knowledge construction, and problem solving. In this context, it indicates that technology literacy is an important factor for creativity and innovation in Nigeria. Paper invoicing has rendered Nigerian companies unsustainable for decades. The result of this study will practically motivate Nigerian companies to switch from manual invoicing to e-invoicing, which is an innovative solution to the paper and postage problem that is itself detrimental to the economic, environment, and society growth. Economically, it will prevent tax evasion and curb prevailing corruption. Environmentally, it will reduce the carbon footprint, thus promoting a green environment and healthy society. Financially, it will reduce cost and optimise the billing process.

FUNDING

This work was supported by the Foundation for Economic Education, Finland under Grant 10-5543, and Erkki Paasikiven säätiö.

REFERENCES

- Adam R. (2007). Paving the Way for E-Invoices. *Global Finance*, **21**(3), 21.
- Ajzen, I. (1991). "The Theory of Planned Behaviour," *Organizational Behaviour and Human Decision Processes* **50**(2), 179-211.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Al Mursalin J. (2012). Information System Adoption and Usage: Validating UTAUT Model for Bangladeshi SMES. *BRAC University Journal*, **9**(1&2), 15-24.
- Alao A. (2013). Nigeria's CAC registers 1.271 million businesses in 2013. Retrieved February 21, 2017 from <http://www.worldstagegroup.com/worldstagenew/index.php?active=news&newscid=12688&catid=2>.
- Averweg, U. R. (2008). Information technology acceptance in South Africa: An investigation of perceived usefulness, perceived ease of use, and actual system use constructs. *The African Journal of Information Systems*, **1**(1), 44-66.
- Babatunde, J. (2016). 17 Million SMEs Not Registered with Corporate Affairs Commission. Retrieved February 21, 2017 from <http://www.boi.ng/17-million-smes-not-registered-joseph-babatunde/>.
- Bagozzi, R. P., and Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, **16**(1), 74-94.
- Bandura A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*. NJ: Prentice Hall.
- Bryman A. and Bell E. (2011). *Business Research Methods* (3rd ed.). New York: Oxford University Press.
- Carlsson, C., Carlsson, J., Hyvonen, K., Puhakainen, J. and Walden, P. (2006). Adoption of mobile devices/services-Searching for answers with the UTAUT. In *Proceedings of the 39th Hawaii international conference on system sciences*, Hawaii.

- Chong A.Y. (2013). Predicting m-commerce adoption determinants: A neural network approach. *Expert Systems with Applications*. **40**(2), 523 - 530.
- Chu K. (2013). Motives for participation in Internet innovation intermediary platforms. *Information Processing and Management*. **49**(4), 945 - 953.
- Compeau D. R., Higgins C. A. (1995a) Application of social cognitive theory to training for computer skills. *Information Systems Research*, **6**(2),118-143.
- Compeau, D. R., and Higgins, C. A. (1995b). "Computer Self-Efficacy: Development of a Measure and Initial Test". *MIS Quarterly* **19**(2), 189-211.
- Compeau, D. R., Higgins, C. A., and Huff, S. (1999). "Social Cognitive Theory and Individual Reactions to Computing Technology: A Longitudinal Study". *MIS Quarterly* **23**(2), 145- 158.
- Corporate Affairs Commission (2005). Making Investing in Nigeria Easy. Retrieved January 13, 2013, from <http://www.cac.gov.ng/Pages/caffairsnews.htm>.
- Davis, F. D. (1989). "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology". *MIS Quarterly*. **13**(3), 319-339.
- Davis, F. D., Bagozzi, R. P., and Warshaw, P. R. (1989). "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models". *Management Science*. **35**(8), 982-1002.
- Doguwa S. I., Olowofeso O. E., and Essien S. N. (2010). Business outlook of small, medium and large scale enterprises: implications for monetary policy in Nigeria. *IFC Bulletin*. **25**, 235.
- Dow W (2006). Implicit Theories: Their Impact on Technology, In J. R. Dakers (Ed.), *Defining technological literacy: Towards an epistemological framework* (pp. 239- 250). New York, NY: Palgrave Macmillan.
- Dulle, F. W., and Minishi-Majanja, M. K. (2011). The suitability of the Unified Theory of Acceptance and Use of Technology (UTAUT) model in open access adoption studies. *Information development*. **27**(1), 32 - 45.
- Dyrenfurth, M. (1991). Technological literacy synthesized. In M. J. Dyrenfurth & M. R. Kozak (Eds.), *Technological literacy (40th Yearbook of the Council on Technology Teacher Education*, pp. 138–183). Peoria, IL: Macmillan, McGraw-Hill.
- Eiser, J.R., Miles, S., and Frewer, L.J. (2002). Trust, perceived risk, and attitudes toward food technologies. *Journal of Applied Social Psychology*, **32**, 2423–2433.
- Federal Reserve Bank of Minneapolis (2016). U.S. Adoption of Electronic Invoicing: Challenges and Opportunities. Payments, Standards and Outreach Group, June 30, 2016 <https://fedpaymentsimprovement.org/wp-content/uploads/e-invoicing-white-paper.pdf>.
- Fishbein, M., and Ajzen, I. (1975). *Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research*. Addison-Wesley, Reading, MA.
- Foon Y.S. and Fah Y. (2011). Internet Banking Adoption in Kuala Lumpur: An Application of UTAUT Model. *International Journal of Business and Management*. **6**(4), 161-167.
- Fornell, C.D. and Larcker F. (1981). Evaluating structural equation models with unobservable variables and measurement errors. *Journal of Marketing Research*, **18**(1), 39-50.
- Gruzd A., Staves K. and Wilk A. (2012). Connected scholars: Examining the role of social media in research practices of faculty using the UTAUT model. *Computers in Human Behaviour*. **28**(6), 2340 - 2350.
- Harald B. (2009). Final Report of the Expert Group on e-Invoicing. DG Internal Market and Services. Retrieved January 10, 2013, from http://ec.europa.eu/internal_market/consultations/docs/2009/e-invoicing/report_en.pdf.

- Hassan A.M., Kunz M.B., Pearson A.W. and Mohamed F.A. (2006). Conceptualization and Measurement of Perceived Risk in Online Shopping. *Marketing Management Journal*. **16**(1), 138-147.
- IFS (2010). eInvoice A Fully Automated Digital Solution For Companies Of All Sizes. Retrieved January 10, 2013, from http://www.industrycortex.com/tracking/outgoing_click/258955513/datasheet-profile-download.
- Illenberger J. and Flötteröd G. (2012). Estimating network properties from snowball sampled data. *Journal of Social Networks*. **34**, 701-711.
- Im I.I., Hong S. and Kang M.S. (2011). An international comparison of technology adoption: Testing the UTAUT model. *Journal of Information and Management*. **48**, 1-8.
- Koch B. (2012). E-Invoicing/E-Billing Opportunities in a challenging market environment. Retrieved January 10, 2013, from <http://www.basware.com/elqNow/elqRedir.htm?ref=http://www.basware.com/sites/default/files/restricted/billentis-einvoicing-ebilling-report-2012.pdf?rrt=1>.
- Koch, B. (2015). E-invoicing / E-Billing. Report. Billentis, 5 June 2015. Web. http://www.billentis.com/e-invoicing_ebilling_market_report_EN.htm.
- Kommerskollegium (2010). E-invoicing in cross-border trade. National Board of Trade. Report. Retrieved January 10, 2013, from <http://www.kommers.se/Documents/dokumentarkiv/publikationer/2010/skriftserien/report-2010-4-e-invoicing-in-cross-border-trade.pdf>.
- Korkman O., Storbacka K., and Harald B. (2010). Practices as markets: Value co-creation in e-invoicing. *Australasian Marketing Journal*. **18**, 236 - 247.
- Kreuzer S. (2017). Explaining organizational susceptibility to coercive pressure: results from a field experiment on e-invoicing IOIS adoption.
- Kuehne, Kathrin; Kosch, Lubov; and Cuylen, Angelica, (2015). "Will XML-based Electronic Invoice Standards Succeed? - An Explorative Study". *ECIS 2015 Completed Research Papers*. Paper 113. http://aisel.aisnet.org/ecis2015_cr/113.
- Kumar S. (2013). The Moderating Factors of 3G User Acceptance Technology in Shimla (India) using UTAUT Model. *International Journal of Computer Science & Engineering Technology*. **4**(6), 670 - 674.
- Lai C., Wang Q., and Lei J. (2012). What factors predict undergraduate students' use of technology for learning? A case from Hong Kong. *Computers & Education*. **59**(2012), 569 - 579.
- Lempinen H. and Penttinen E. (2009). Assessing The Business Value of Electronic Order-to-Payment Cycle. In *Proceedings of 17th European Conference on Information Systems, Verona, Italy: Information Systems*, pp. 1 – 13.
- Leso, T. and Peck, K. L. (1992). Computer anxiety and different types of computer courses. *Journal of Educational Computing Research*, **8**(4), 469-478.
- Liping A., Jianyuan Y. and Lingyun T. (2008). Methodology for Web Services Adoption Based on Technology Adoption Theory and Business Process Analyses. *Journal of Computers & Education*. **13**(3), 383 - 389.
- Ma'aruf L.M. and Abdulkadir K. (2012). An overview of e-commerce implementation in developed and developing country; A case study of United State and Nigeria. *International Journal of Modern Engineering Research*. **2**(5), 3068 - 3080.
- Mandal D. and McQuen R.J. (2012). Extending UTAUT to Explain Social Media Adoption by MicroBusinesses. *International Journal of Managing Information Technology (IJMIT)*. **4**(4), 1-11.

- Moore G. C., and Benbasat, I. (1991). "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation," *Information Systems Research*. **2**(3), 192-222.
- Okeke, O. J. P. (2017). Reflections of a Doctoral Research on Knowledge Management (KM) through an Afrocentric lens in a Nigerian Oil Corporation. *The African Journal of Information Systems*, **10**(1), 45-53.
- Olaleye, S.A., & Sanusi, I.T. (2017). Companies Resistance and Intention to use Electronic Invoicing in Nigeria. 14th IEEE India Council International Conference (INDICON-2017) 15-17, IIT, ROORKE, India.
- Olaleye, S. A., Salo, J., & Ukpabi, D. C. (2018). The Role of Reputation on Trust and Loyalty: A Cross-Cultural Analysis of Tablet E-Tailing. *International Journal of E-Business Research (IJEER)*, **14**(2), 61-75.
- Olaleye, S. A., Sanusi, I. T., Ukpabi, D., & Okunoye, A. (2018). Evaluation of Nigeria Universities Websites Quality: A Comparative Analysis. *Library Philosophy and Practice*, 2018.
- Olatokun W. and Bankole B. (2011). Factors Influencing Electronic Business Technologies Adoption and Use by Small and Medium Scale Enterprises (SMES) in a Nigerian Municipality. *Journal of Internet Banking and Commerce*. **16**(3), 1–26.
- Outokumpu (2012). Outokumpu – International Stainless Steel Company. Retrieved January 10, 2013, from <http://www.outokumpu.com/en/AboutUs/Pages/default.aspx>.
- Pahnila S., Siponen M., and Zheng X. (2011). Integrating Habit into UTAUT: The Chinese eBay Case. *Information Systems*. **3**(2), 1-30.
- Parasuraman S. and Igarria M. (1990). An examination of gender differences in the determinants of computer anxiety and attitudes toward microcomputers among managers. *International Journal of Man Machine Studies*. **32**(3), 327 - 340.
- Park, J., Yang, S., and Lehto, X. (2007). Adoption of mobile technologies for Chinese consumers. *Journal of Electronic Commerce Research*. **8**(3), 196 - 206.
- Poel K., Marneffe, W. & Vanlaer, W. (2016). Assessing the electronic invoicing potential for private sector firms in Belgium. *The International Journal of Digital Accounting Research* Vol. 16, 2016, pp. 1 – 34.
- Ramburn H. and Belle J.V. (2011). Use and adoption of Mobile Data Services in Africa: An Empirical Study in Mauritius and South Africa. *Journal of e-Education, e-Business, e-Management and e-Learning*. **1**(1).
- Rogers, E. M. (1995). *Diffusion of Innovations* (4th ed.). New York, NY: The Free Press.
- Saadé R.G. and Kira D. (2009). Computer Anxiety in E-Learning: The Effect of Computer Self-Efficacy. *Journal of Information Technology Education*, **8**, 178-191.
- Saidi E. (2010). Towards a faultless mobile commerce implementation in Malawi. *Journal of Internet Banking and Commerce*. **15**(1).
- Salmony M. and Harald B. (2010). E-invoicing in Europe: Now and the future. *Journal of Payments Strategy & Systems*. **4**(4), 371–380.
- Sharma A.K. and Kumar D. (2012). User Acceptance of Desktop Based Computer Software Using UTAUT Model and addition of new Moderators. *International Journal of Computer Science & Engineering Technology*. **3**(10), 509 - 515.
- Shroff R.H., Deneen C.C. and Ng E.M. (2011). Analysis of the technology acceptance model in examining students' behavioural intention to use an e-portfolio system. *Australasian Journal of Educational Technology*. **27**(4), 600-618.

- Straub D.W. and Jones A.B. (2007). Veni, Vidi, Vici: Breaking the TAM Logjam. *Information Systems*. **8**(4), 223 - 229.
- Taiwo A.A. and Downe A.G. (2013). The Theory of User Acceptance and Use of Technology (UTAUT): A Meta-Analytic Review of Empirical Findings. *Journal of Theoretical and Applied Information Technology*. **49**(1), 48-58.
- Tavakol M. and Dennick R. (2011). Making sense of Cronback's alpha. *International Journal of Medical Education*. **2**, 53-55.
- Taylor S., and Todd P. A. (1995a). "Assessing IT Usage: The Role of Prior Experience". *MIS Quarterly*. **19**(2), 561-570.
- Tenhunen M. and Penttinen E. (2010). Assessing the carbon footprint of paper vs. e-invoicing. In *Proceedings of 21st Australasian Conference on Information Systems, December 1 - 3, 2010, Brisbane, Australia*.
- Teo T.S.H. and Ranganathan C. (2004). Adopters and non-adopters of business-to-business electronic commerce in Singapore. *Information & Management*. **42**, 89 - 102.
- The Wall Street Journal (2009, June 26). The Cap and Tax Fiction: Democrats off-loading economics to pass climate change bill. *Review and Outlook*. Retrieved September 21, 2013, from <http://online.wsj.com/article/SB124588837560750781.html>.
- Thompson, R. L., Higgins, C. A., and Howell, J. M. (1991). "Personal Computing: Toward a Conceptual Model of Utilization". *MIS Quarterly*. **15**(1), 124-143.
- Tieto (2011). Outokumpu – handling half a million invoices a year. Retrieved January 10, 2013, from http://www.tieto.com/what-we-offer/cloud-services/business-information-exchange/e-invoicing-services/18318/customer-cases/outokumpu/Case%20Outokumpu_September%202011.pdf.
- Triandis H.C. (1980). Values, Attitudes, and Interpersonal Behaviour. *Nebraska Symposium on Motivation*. **27**, 195-259.
- Venkatesh V., Morris M.G., Davis G.B. and Davis F.D. (2003). User Acceptance of Information Technology: Toward A Unified View. *MIS Quarterly*. **27**(3), 425 - 478.
- Vervaeke H.K.E., Korf D.J., Benschop A. and Brink W.V.D. (2007). How to find future ecstasy-users: Targeted and snowball sampling in an ethically sensitive context. *Journal of Addictive Behaviours*. **32**, 1705 - 1713.
- Walker S.C. and Pearson J. (2012). Intent to Use Technology: Facilitation Effect of Group Presence. *International Journal of Business Information and Technology*. **1**(1). 1-15.
- Warshaw P.R. and Davis F.D. (1985). Disentangling behavioural intention and behavioural expectation. *Journal of Experimental Social Psychology*. **21**. 213-228.
- Worldometers (2017). Nigeria Population (LIVE). Retrieved July 04, 2013, from <http://www.worldometers.info/world-population/nigeria-population/>.
- Yawson R 2010 - An epistemological framework for nanoscience and nanotechnology literacy. *International Journal of Technology and Design Education*. DOI: 10.1007/s10798-010-9145-1.
- Zhou T., Lu Y. and Wang B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. *Computers in Human Behaviour*. **26**, 760 -767.