# MODEL OF TECHNOLOGY ACCEPTANCE AFFECTING USER BEHAVIOURAL INTENTION IN E-PROCUREMENT ADOPTION IN THE NIGERIAN PUBLIC SECTOR

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**by**

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## LIST OF ABBREVIATIONS

| | |
|---|---|
| B2B | Business to Business |
| B2C | Business to Customer |
| BPP | Bureau for Public Procurement |
| CAC | Corporate Affairs Commission |
| CR | Composite Reliability |
| E-GP | Electronic Government Procurement |
| EP | Electronic Procurement |
| ERP | Enterprise Resource Planning |
| E-TAM | Extended Technology Acceptance Model |
| GDP | Gross Domestic Product |
| GIFMIS | Government Integrated Financial and Management Information System |
| HND | Higher National Diploma |
| ICT | Information and Communication Technology |
| IS | Information Systems |
| ISP | Internet Service Providers |
| IT | Information Technology |
| MED | Mediator |
| MOD | Moderator |
| NCC | National Communications Commission |
| NeGST | National e-Government Strategies Limited |
| NITDA | National Information Technology Development Agency |
| NMC | National Media Commission |
| NOCOPO | Nigerian Open Contract Potel |
| PCOM | Perceived Compatibility |
| PEOU | Perceived Ease of Use |
| PLS | Partial Least Squares |
| PR | Perceived Risk |
| PS | Perceived Security |
| PT | Perceived Trust |
| PU | Perceived Usefulness |
| SAP | System Application and Processes |

| | |
|---|---|
| SD | Standard Deviation |
| SE | Standard Error |
| SEM | Structural Equation Modelling |
| SPSS | Statistical Package for Social Sciences |
| TAM | Technology Acceptance Model |
| TPB | Theory of Planned Behaviour |
| TRA | Theory of Reasoned Action |
| TEP | Technophobia |
| US | United States |
| USD | United States Dollar |
| UTAUT | Unified Theory of Acceptance and Use of Technology |
| VIF | Variance Inflated Factor |

# MODEL PENERIMAAN TEKNOLOGI YANG MEMPENGARUHI NIAT TINGKAH LAKU PENGGUNA DALAM PENERIMAGUNAAN E-PEROLEHAN DALAM SEKTOR AWAM DI NIGERIA

## ABSTRAK

Penerimagunaan perolehan elektronik (e-perolehan) berpotensi untuk mempunyai pelbagai manfaat strategik, operasi dan taktikal. E-perolehan dilihat sebagai wadah untuk meningkatkan perkhidmatan awam dan, sebagai hasilnya, telah diberikan keutamaan dalam pembaharuan perolehan awam di banyak negara. Di sebalik segala usaha oleh kerajaan Nigeria untuk menerima guna e-perolehan di negara ini, penggunaan teknologi e-perolehan adalah sangat rendah dalam sektor awam. Ini telah dikaitkan dengan kekurangan model sedia ada untuk menerima guna e-perolehan dan kekurangan latihan e-perolehan yang kakitangan pemerolehan sektor awam. Juga, tiada kajian yang meneroka faktor yang mempengaruhi niat pengguna untuk menerima guna e-perolehan dalam sektor awam Nigeria. Kajian ini bertujuan untuk membangunkan model penerimaan teknologi yang mempengaruhi niat tingkah laku pengguna untuk menerima guna e-perolehan dalam sektor awam di Nigeria dengan mengambil kira peranan penyederhanaan latihan. Model Penerimaan Teknologi (TAM) telah diterima pakai dan diperluaskan dengan sistem yang berkaitan; berkaitan dengan keselamatan; dan faktor psikologi peribadi yang berkaitan dengan teknologi. Kaedah kajian tinjauan soal selidik dalam talian digunakan untuk mengumpulkan data. Teknik persampelan bukan kebarangkalian dan persampelan rawak digunakan untuk memilih 15 kementerian persekutuan dan 278 responden untuk pengumpulan data. Data dianalisis menggunakan teknik pemodelan persamaan struktur kuasa dua terkecil separa. Keputusan menunjukkan bahawa semua faktor teknologi yang dikaji

mempunyai kesan yang ketara ke atas niat tingkah laku untuk menerima guna e-perolehan kecuali persepsi kemudahan penggunaan, persepsi keserasian dan persepsi risiko. Hasil juga menunjukkan bahawa latihan menyederhanakan dua daripada tujuh hubungan penyederhana yang dihipotesiskan. Hasil kajian empirikal ini akan membantu kerajaan Nigeria dalam mengetahui faktor yang mempengaruhi penggunaan pengguna terhadap e-perolehan dalam sektor awam, dan dapat menggunakannya untuk menambah baik proses perolehan di negara ini.

# MODEL OF TECHNOLOGY ACCEPTANCE AFFECTING USER BEHAVIOURAL INTENTION IN E-PROCUREMENT ADOPTION IN THE NIGERIAN PUBLIC SECTOR

## ABSTRACT

Electronic procurement (e-procurement) adoption has the potential to have a wide range of strategic, operational, and tactical benefits. E-procurement is viewed as a vehicle for improving public services and, as a result, has been in the forefront of public procurement reform in many nations. Despite all the efforts by the Nigerian government to adopt e-procurement in the country, the adoption of e-procurement technology is very low in the public sector. This has been attributed to the lack of existing model for e-procurement adoption and lack of e-procurement training possessed by the public sector procurement employees. Also, there is absence of studies exploring the factors that affects user intention to adopt e-procurement in the Nigerian public sector. This study aims to develop a technology acceptance model that affects user behavioural intention to adopt e-procurement in the Nigerian public sector taking in to account the moderating role of training. The Technology Acceptance Model (TAM) model was adopted and extended with system related; security related; and personal psychology related technology factors. The survey research method was used to collect data using online questionnaire. A non-probability sampling technique and a simple random sampling were used to select 15 federal ministries and 278 respondents respectively for the data collection. The data were analyzed using the partial least square structural equation modelling technique. The results indicate that all the technology factors studied have significant effects on behavioural intention to adopt e-procurement except perceived ease of use, perceived compatibility and perceived risk. The result also

indicate that training moderates two out of seven hypothesized moderating relationships. The results of this empirical study will assist the Nigerian government in knowing the factors that influence user adoption of e-procurement in the public sector, and can use them to improve procurement processes in the country.

# CHAPTER 1

# INTRODUCTION

## 1.1 Introduction

Electronic procurement (e-procurement) is an attempt to modernise the process of conducting procurement that is marred with various problems like corruption, lack of transparency and efficiency, excessive delays in the procurement process, lack of competitive tendering and preferential treatment during tender process among others. The adoption of e-procurement therefore is regarded as the most important step that will guard against these problems. E-procurement can help governments to convert corruption, enhance transparency and efficiency and reduce operating cost. However, government ministries in Nigeria are lagging behind their counterparts in the private sector in terms of e-procurement adoption. Therefore this research will investigate the determinants of technology acceptance and determine their effects in relation to the employees' intention to adopt e-procurement at the federal government entities in Nigeria. This chapter contains the background of the study, the statement of the problem, research questions that this study aims to answer and the research objectives. The chapter also parades the significance as well as the scope of the study.

## 1.2 Background of the study

Governments across the globe are deploying the advantages offered by information and communication technology (ICT) to improve the standard of public procurement through the adoption of e-procurement technology (Adjei-Bamfo et al., 2020). E-procurement is considered as the employment of electronic means during public procurement processes (Alomar & de Visscher, 2019). Public procurement is regarded as the process whereby procurement entities of government acquire goods,

works and services (Ameyaw Domfeh et al., 2018). Governments especially in developing countries provide basic social amenities and other developmental projects through public procurement (Kioko & Were, 2014). Public procurement is therefore seen as crucial in service delivery accounting for a large proportion of total expenditure (Basheka & Bisangabasaija, 2010).

The importance of public procurement cannot be over stated as it constitutes up to about 50% of the government's budgets in most nations (Ogubala & Kiarie, 2014), while the global average stood at 12-20% (Frøystad & Heggstad 2010). In Nigeria, procurement accounts for 80% of government expenditure at all levels (Adebiyi, Ayodele A., Ayo, 2010). The foregoing statistics depict the importance of procurement in any nation. Corruption has been the major problem in public procurement processes (Thai, 2001). This corruption according to Neupane, Soar, Vaidya, & Yong, (2012) culminates in to many problems like *"lack of accountability and transparency, lack of political control and auditing, weak professionalization of the bureaucracy and many more"* (p.305). The said problems and many others have made it possible for many countries to institute various forms of procurement reforms, intended to make procurement efficient, less susceptible to corruption, fraud and mismanagement.

In the global arena, countries are automating their procurement process from the manual and paper-based to the one which is ICT driven. This is made possible through the adoption and implementation of e-procurement (Adjei-Bamfo et al., 2020). Traditional system of procurement lacks the efficiency and innovation necessary for industrial growth (Jalil et al., 2017). E-procurement is regarded as the innovation that will transform the procurement process in an efficient and transparent manner.

Therefore, public sector electronic procurement is the application of technology particularly information technology (IT) by the institution of government in executing procurement processes including the purchase of goods and services, as well as the award of contracts to successful bidders through the internet and other web-based services (Davila & Gupta, M, 2003; Leipold, Klemow, Holloway, & Vaidya, 2019).

For this study's purposes, Public e-procurement (e-government procurement) is regarded as the utilization of technology (especially online technology) to acquire works, goods, and services within a management framework that is efficient and high-quality. It also entails utilizing information and communication technologies to transform connections with individuals, corporations, and government agencies (Nyaporo & Atambo, 2017). Also, Vaidya et al., (2006) defined e-procurement as an inter-organizational information system that automates various portions of the public procurement processes to increase transparency and efficiency. Hence, e-procurement automates the process of procurement by allowing organizations to use web-based resources to procure goods and services from suppliers in the supply chain (Adjei-Bamfo et al., 2020). In this way, prospective contractors are therefore discovered and worked together at e-market places and with electronic payment methods (Standing et al., 2007).

There have been many complaints about the procurement procedure in Nigeria's public sector, which is paper-based and conducted manually. The paper-based/manual procurement is characterized with human interface leading to extravagant corruption, lack of transparency and efficiency, lack of competitive tendering, preferential treatment during tender processes and excessive paper works (Abdullahi *et al.,* 2019; Musa et al., 2020). Other problems include utter disrespect for

public service laws and financial regulations, over-invoicing, and inflation in contracts (Oguonu, 2012; Shwarka & Anigbogu, 2012). The consequences of these problems have consumed some prominent citizens because two former state governors are currently serving various jail terms in Nigerian prisons due to misappropriation of public funds related to procurement.

In Nigeria, the quest for transparency and accountability necessitated the public procurement reforms of 1999 due to excessive irregularities in the country's public procurement processes (Williams-Elegbe, 2015). This resulted to the passage into law of the public procurement Act 2007, which was intended to regulate all public procurement activities to achieve efficiency, professionalism, transparency, accountability, competitiveness, fairness, and value for money (Chikwe & Obi, 2016). Prior to the reforms, Nigeria's public procurement faced a lot of challenges such as *"proliferation and ineffectiveness of tender boards; lack of professionalism in the execution of the procurement functions; weaknesses in bank-financed projects; excessive deposit for the opening of letters of credit; lack of communication strategy; weaknesses in the export, import and tariff procedures; lack of streamlined quality control practices; and lack of knowledge in electronic procurement in the public sector"* (World Bank, 2000 p.26-30). These problems are far from being over, and include excessive delays, human interface and preferential treatment in the tender process (Odulana, A. O, and Oyewobi, 2019). Also, procurement irregularities such as interference in contract awards, non-compliance with the guidelines of public procurement as contained in the public procurement act of 2007 are evident (Zadawa et al., 2018).

E-procurement is widely used in advanced countries of the world including the United States (US), where rapid development of e-procurement was in early 2000, United Kingdom and Australia, and also in growing economies such as India, China, South Korea, Brazil, and Mexico, where e-procurement technologies are already in place (K Vaidya & Hyde, 2011). Recently, Asia and the Pacific countries have increasingly adopted ICT systems to better government services and business transactions (Wescott, 2001). Developing countries are not left behind. For example, e-procurement was implemented in Malaysia in 2000. This was made possible by implementing a system of electronic procurement known as "e-perolehan" alongside online tendering and online registration of companies and businesses (Nasrun et al., 2016). In Indonesia, e-procurement was adopted in 2010 when the president of Indonesia, through presidential regulation number 54, directed all procurement of goods and services of the government to be conducted electronically (i.e. e-procurement) (Radianto et al., 2020).

The Nigerian government has taken significant measures since 2001 to bring the country on track in the field of Information and Communication Technology (ICT) growth and governance utilization. This gave rise to the introduction of e-government systems in the country (Ansari, 2020). The introduction of e-government is aimed at automating the activities of government in its interaction with citizens, businesses or other government entities. Although e-procurement technology is part of e-government systems (Nasrun et al., 2016), it was not until 2016 when the government of Nigeria announced the introduction of e-procurement in the country (World Bank, 2016). Justifying the introduction at a stakeholders' workshop, Nigeria's Minister of finance Mrs. Kemi Adeosun stated that *"The introduction of e-procurement came at an auspicious period in the life of the nation when the need for improved fiscal*

*discipline is acute. If the country is to achieve transparency and efficiency, e-procurement is an inevitable option"*. She further stated; *"These virtues are needed in our procurement system, both to improve the environment for doing business and to minimize wastage. E-procurement offers appropriate solutions to the issues of transparency and accountability in public expenditure"* (World Bank, 2016). Therefore, the adoption of e-procurement is seen as the optimum way to assist governments especially that of developing countries to convert corruption, enhance transparency and effectiveness in the system, reduce operating cost, monitor and improve the quality of service delivery (Odulana, A. O, and Oyewobi, 2019). Since Nigeria is currently in the process of exiting from the manual to a digital economy, the adoption of e-procurement remains an essential prerequisite to achieving transparency, accountability and enhanced service delivery under the digital economy framework.

In Nigeria, public procurement processes are carried out by the ministries, departments, and other agencies (MDAs) of government, also known as parastatals, either at the federal, states, or local government levels. This research focuses on the procurement employees and employees of information and communication technology (ICT) departments of all the federal ministries, departments and agencies of the federal government of Nigeria who have been involved in e-procurement training, situated in Abuja the federal capital. The choice of federal government is based on the fact that the public procurement act (the procurement law of the country), is designed to be applicable to procurements of federal government entities and other entities that derived their funding from the federation account (PPA, 2007). This implies that policies of government starts at the federal level before the states and local governments follow suit. Each ministry or parastatal has its own independent budget

for capital and recurrent expenditure every year. The procurement departments of these government entities are responsible for all procurement activities.

Existing e-procurement adoption studies have predominantly utilized Technology Acceptance Model (TAM) developed by Davis, Bagozzi, & Warshaw, (1989). It is regarded as the most important of the individual-level acceptance models (Brandon-Jones & Kauppi, 2018). The Technology Acceptance Model (TAM) theory has been applied to a variety of technological situations, and it gives recognised and confirmed explanations for how technology can be utilized (Marchand & Raymond, 2008). Consequently, Prince, Samuel, Jack, & Kanu, (2019) argued that Technology Acceptance Model (TAM) possesses the efficiency and effectiveness in predicting and explaining the potential user's actual behaviour intentions in adopting new technology.

The original Technology Acceptance Model (TAM) has two constructs; (perceive usefulness (PU) and perceived ease of use (PEOU)). The Technology Acceptance Model (TAM) postulates that perceived usefulness and perceived ease of use are the key determinants of end users intention to use IT (Ramkumar & Jenamani, 2015). The model also postulates that system usage is contingent on behavioural intention to use the system (Nasri & Charfeddine, 2012). The Technology Acceptance Model (TAM) has been blamed for being decisive in its approach and ignoring individual users' unique characteristics (Slade et al., 2015). However, Venkatesh & Davis, (2000) suggested the extension of the Technology Acceptance Model (TAM); (E-TAM) with relevant variables in order to improve user adoption behaviour. To the best knowledge of the researchers, few studies have examined the influence of system-related, security-related, and individual difference/personal psychology-related technology acceptance factors on users' intention to adopt e-procurement.

Consequently, This study adopts and extends the Technology Acceptance Model (TAM) with relevant technology acceptance factors that are system related (Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Perceived Compatibility (PCOM)), and security related factors (Perceived Trust (PT), Perceived Risk (PR) and Perceived Security (PS)), derived from literature and validated by procurement experts in Nigeria in order to develop a model that will aid to explore the factors that influence the adoption of e-procurement by the individual public sector employees, and examine their effects on the intention to adopt e-procurement in the Nigerian context. For the purpose of this study, these factors are referred to as technology acceptance factors. The choice of these factors was based on the fact that Nigeria ranked highly in the Transparency International's corruption index. Therefore the choice of system and security related factors in a country where security of data and risks associated with online transactions are of great concern to the citizenry, is justifiable.

Additionally, this study attempts a novel approach by integrating a personal psychology construct; Technophobia (TEP) into the Technology Acceptance Model (TAM) to explore users' behavioural intention in the context of e-procurement. The construct is selected based on recommendations for future studies by previous researchers (Khasawneh, 2018b), and considering users' fear of new technology like e-procurement in Nigeria (Adebayo & David Evans, 2016). This is in line with Au *et al.,* (2008) who submitted that the failure of an information system is attributable to psychological and organisational concerns rather than technological issues, and therefore individual differences need to be taken into account. Similarly, this study will examine the moderating effect of training on the relationship between the technology factors and the intention to adopt e-procurement. According to Noor & Nasirun, (2015)**,** the assessment on training is done to measure its effectiveness. The

study will seek to investigate the effectiveness of training on the intention to adopt e-procurement. Several researchers (Adedeji et al., 2017; Akaba et al., 2020; Githinji & Were, 2018; Vaidya, K, GC, 2009) have advocated the use of training as a precursor to effective adoption of e-procurement.

## 1.3 Problem statement

Irregularities in procurement processes have continued to be a source of worry in Nigeria's quest of becoming one of the 20 best economies in the world by depriving the country of much-needed infrastructural and economic revolutions. The country cannot boast of a functional railway service; the roads are bad, with no substantial efforts to repair or construct new ones. Even where the new ones are built, they hardly last their life span due to severe compromises. Constant electricity and portable drinking water have continued to elude the citizens due to corruption in the award and execution of contracts. The collapse of Nigerian Airways, the country's national carrier, resulted from procurement irregularities (Adebiyi et al., 2010). Irregularities in the procurement processes have negatively affected every sector of the Nigerian economy. Corroborating, Odulana and Oyewobi (2019) averred that corrupt practices in the Nigerian construction industry are domiciled in the public procurement processes.

The high level of corruption and unethical practises in the conduct of public sector (government) procurement practises, where procurement accounts for 45 to 65 percent of a developing country's budget and 20 percent to 70 percent of its GDP (Odulana, A. O, and Oyewobi, 2019), prompted the researcher to focus on public sector procurement in Nigeria. This corruption got rooted in the procurement processes because it is still conducted manually, and there is lack of intention to shift to e-

procurement by the procurement employees in Nigeria (Afolabi et al., 2020). The Ministries, Departments and Agencies (MDAs) of government are responsible for the management of public contracts (Aduwo et al., 2020). Regrettably, the implementation of the Public procurement law; Public Procurement Act 2007 (PPA Act of 2007) that was intended to curve against these anomalies by ensuring accountable and transparent procurement process has not done much. The problems still persist. A paradigm shift that ensures transparency, efficiency and accountability is therefore needed to bring the country out of the present quagmire.

Several benefits have been attributed to e-procurement technology adoption both at individual and organizational levels (Musa et al., 2020; Ramkumar, 2016; Ramkumar, Schoenherr et al., 2019). Converting corruption, enhancing transparency, accountability and effectiveness in the system, reduction in operating cost, monitoring and improving the quality of service delivery and better integration with suppliers are some of the frequently cited benefits of e-procurement technology adoption (Odulana, A. O, and Oyewobi, 2019; Toroitich et al., 2017). Organizations that implement e-procurement record over 40% savings on transaction expenses (Davila & Gupta, M, 2003; Hawking et al., 2004). Even though the benefits of adopting e-procurement has been shown significantly, the intention of users towards adoption of e-procurement is not known.

This has prompted the government in August 2016, to announce the introduction of e-procurement in the country's public procurement systems (Osoba, 2016). Even when the announcement was made, there were no clear policy guidelines on the implementation to support the claim. Consequently, Abdullahi et al., (2019) reported that most public sector organizations execute their procurement procedures

using manual techniques in Nigeria. The private sector on the other hand, recorded an appreciable level of e-procurement adoption as reported by (Afolabi et al., 2019). They averred that more than 60% of contracting and consulting firms have participated in using e-procurement technologies in the Nigerian private sector environment. However, only 20% of government ministries, parastatals, and institutions have utilized e-procurement systems, despite the high number of construction projects procured through these institutions, as the government is the leading consumer of construction works in Nigeria (Afolabi et al., 2019). This conclusion implies that, in contrast to the United Kingdom, where the public sector led the way in e-procurement use in the construction sector (Robert Eadie, Srinath Perera, 2011), the opposite is true in countries such as Nigeria and South Africa. This implies that the government's role in providing leadership, legal and regulatory framework, and information and technological infrastructure to encourage critical mass adoption of e-procurement may be absent.

Despite the huge benefits of adopting e-procurement, the deployment of e-procurement in Nigeria is still in its early stages (Abdullahi et al., 2019). The adoption of e-procurement is progressing slowly (Afolabi, et al., 2019). Aduwo et al., (2016) identified the predictors of low e-procurement adoption in the Nigerian building industry to include high investment costs in e-procurement tools and technologies, a lack of technical expertise to handle e-procurement technologies and tools, terrible state of Information and Communication Technology (ICT) and Internet infrastructure and unreliable power supply, high cost of internet services, technical, infrastructure, political, social, and cultural issues, and the perception that the benefits of using e-procurement are marginal. At present, the e-procurement initiatives are still at the initiation stage.

Despite the efforts the Nigerian government is making to introduce e-procurement in the public sector, there is resistance from the end users to change from the manual process to a more sophisticated system using electronic procurement technology, as statistics indicate only 20% government participation in e-procurement compared to 60% participation by the private sector (Afolabi et al, 2019). This is explained by the low adoption of e-procurement in the public sector as compared to the private sector in Nigeria (Abdullahi et al., 2019; Afolabi *et al.,* 2019). The end users' behavioural intention to adopt e-procurement in the public sector need to be investigated.

However, Aduwo et al., (2016) averred that absence of proof of the advantages of e-procurement in the construction industry contributes to poor e-procurement adoption. Therefore, the current study investigates the effects of perceived usefulness on behavioural intention to adopt e-procurement. Similarly, Ansari, (2020) submitted that the perception of several users of e-procurement including the educated elites believe that the system is difficult for them. Therefore, this presents an opportunity (gap) to examine the relationship between perceived ease of use and intention to adopt e-procurement. Furthermore, researchers (Gefen & Straub, 2003; Oliveira et al., 2017) related the importance of trust in e-transactions. This study therefore investigates the effects of perceived trust in relation to behavioural intention to adopt e-procurement. Also, lack of compatibility of existing software in the market with the internal technology systems of organizations is another challenge to the adoption of e-procurement (Nasrun *et al.,* 2016). The current study investigates the effects of perceived compatibility on behavioural intention to adopt e-procurement.

Furthermore, Truong, (2019) related that when a user perceives a high level of risk, he or she may not be willing to use e-procurement technologies. Likewise,

Githinji & Were, (2018) established that security of data is a major issue in the implementation of e-procurement. Therefore, this study investigates the effects of perceived risk and perceived security on users' intention to adopt e-procurement. Also, Nasrun *et al.,* (2016) reported that challenges to the implementation of e-procurement include fear of transitioning to a different system, referred to as technophobia (Osiceanu, 2015; Teichmann, Murdvee, & Martínez-c, 2017). Technophobia is regarded as negative feelings, worry, dread, and disliking of using modern technology and equipment (Osiceanu, 2015; Teichmann *et al.,* 2017). Khasawneh, (2018b) submitted that technophobia plays a major role on employees' acceptance of new technology. The current study therefore investigates the effects of technophobia on users' intention to adopt e-procurement in the Nigerian public sector. These factors are grouped in to system related factors (perceived usefulness (PU), perceived ease of use (PEOU), perceived compatibility (PCOM)), Security related factors (perceived trust (PT), perceived risk (PR), perceived security (PS)), (Alshannag *et al.,* 2022; Khalilzadeh, Ozturk, & Bilgihan, 2017; Lwoga & Lwoga, 2017; Pham & Ho, 2015), and personal psychology factor (technophobia (TEP)) (Khasawneh, 2018a).

Therefore, it is pertinent to conclude that the low adoption of e-procurement witnessed in Nigerian public sector can be associated with the lack of proof of the advantages of e-procurement, the perception of the difficulty of e-procurement technologies, lack of trust in e-procurement technologies, lack of compatibility of existing software in the market, high level of risks and lack of security of data and the effect of technophobia.

As Venkatesh, V., Morris, M.G., Davis, (2003) suggested that Future studies should concentrate on developing constructs that can improve on what is presently known and understood in terms of predicting intention and behaviour, this study

theorised that system related factors (perceived usefulness (PU), perceived ease of use (PEOU), perceived compatibility (PCOM)), Security related factors (perceived trust (PT), perceived risk (PR), perceived security (PS)), and personal psychology factor (technophobia (TEP)) are linked to the context of Nigeria, and are therefore hypothesized to be the factors that affect e-procurement adoption in the public sector of the country.

E-procurement has witnessed increasing application in the last decades both in industry and government (Croom & Brandon-Jones, 2007; Davila & Gupta, M, 2003). However, in Nigeria public sector government departments are lagging behind their industry counterparts in terms of adoption of e-procurement (Afolabi et al., 2019). In the developing countries especially Africa there is paucity of e-procurement adoption, where it is being employed, the adoption is still at its infancy stage (Eziyi O. Ibem & Laryea, 2015). Several researchers have undertaken a study of e-procurement in Nigeria with varying perspectives. Oyediran & Akintola, (2011) investigated e-Tendering, an aspect of e-procurement; Bello, & Iyagba, (2018) examined the barriers to the adoption of e-Procurement; Eziyi Offia Ibem et al., (2016) investigated the factors that influenced the adoption, while Aduwo, Ibem, Ayo-Vaughan, Uwakonye, & Owolabi, (2017) assessed the level of use of e-procurement in the Nigerian building industry; Afolabi, Ibem, Aduwo, Tunji-Olayeni, & Oluwunmi, (2019) identified the elements that allow e-procurement adoption in the Nigerian construction business. Their studies are however limited to the private sector, and even those that incorporated some government entities did not investigate the effects of these factors on employees' intention to adopt e-procurement in the Nigerian public sector. This research is intended to fill this gap by focusing on electronic Government procurement

in Nigeria with a view to understanding the technology acceptance factors and their effects on employees' intention to adopt e-procurement in the Nigerian public sector.

The TAM model remains the most widely used in various technology adoption studies to predict the willingness of users to accept technology (Ren et al., 2022). However, the main problem is that the correlation between the system related (PU, PEOU, and PCOM), security related (PT, PR, and PS), personal psychological factor (TEP) is not well understood by the service providers and the policy makers in the Nigerian government. Therefore, this study is required in order to empirically test and understand the effects of these technology factors on individual employees' intention to adopt e-procurement in the Nigerian public sector.

Low technology literacy has been reported as one of the setbacks in e-procurement adoption (Belisari et al., 2020). In Nigeria, the main barrier behind the relatively low-profile adoption of e-procurement is the lack of technical expertise and skills in setting up e-procurement technologies and processes second only to high cost of Information Technology (IT) investment (Aduwo et al., 2016). Procurement officials in government entities do not have the adequate knowledge and skills which promote the adoption of e-procurement. Most of the people are not well-acquainted with the usage of Information and Communication technologies (ICTs), which serves as a major hindrance to the take-up of e-procurement in the country (Ansari, 2020). A great majority of Nigerians assume the use of information and communication technologies are very difficult for them. The sad reality is that usage of ICTs is very low even among the educated class (Ansari, 2020). In the same vain, Adebayo & David Evans, (2016) also established that fear of change to a new system, lack of skills and knowledge of e-procurement among others are the main barriers to the implementation

of e-procurement in Nigeria. Furthermore, according to (Evwiekpaefe & Chiemeke, 2011), numerous users of new technologies, such as e-procurement, believe the system is difficult to use and are sceptical of its performance. Despite these attempts to explain the dilemma, users' personal psychological concerns were neglected. Therefore, this study investigates the effect of technophobia on behavioural intention to adopt e-procurement.

The low technology literacy which serves as a major barrier to the implementation of e-procurement in Nigeria as reported by Ansari, (2020), underscores the importance of skills and knowledge in e-procurement adoption. The respondents' responses in the questionnaire attested to this fact, where most of the respondents emphasized training as the most important factor in e-procurement adoption decision. Correspondingly, training has been established as the critical success factor that influence e-procurement adoption/implementation (Afolabi, Ibem, Aduwo, Tunji-Olayeni, & Oluwunmi, 2019; Mathenge & Wausi, 2018; Kishor Vaidya *et al.,* 2006a). Several researchers Adebayo & David Evans, (2016); Adedeji, Dele, Rapheal, Opeyemi, & Damilola, (2017); Akaba, T.I.; Norta, A.; Udokwu, C.; Draheim, (2020); Chikwe & Obi, (2016); Githinji & Were, (2018); Vaidya, K, GC, (2009) have established that training has a significant impact on the adoption of e-procurement. Even though researchers (Brandon-Jones & Kauppi, 2018; Nyaporo & Atambo, 2017; Singh & Punia, 2011) have examined the relationship between training/user training as an independent variable and e-procurement adoption, much has not been done to explore the role of training as a moderator in e-procurement context and specifically in the relationship between the technology factors and the intention to adopt e-procurement. These studies have not been able to provide evidence as to whether training strengthened or weakened the relationships. Moreover, this study is absent in

the Nigerian public sector. Previous researches have yielded conflicting outcomes on the relationship between the Technology Acceptance Model (TAM) constructs and behavioural intentions (Kademaunga & Phiri, 2019; Sharma, Sharma, & Dwivedi, 2019). Where conflicting results in previous studies, Baron, R. M. and Kenny, (1986) suggested the introduction and testing a moderation effect. Therefore, this present study examined the role of training as a moderator on the relationship between the technology adoption factors and users' intention to adopt e-procurement in the public sector in Nigeria. The influence of training on the employees' intention to adopt e-procurement has not been explored before. To the best knowledge of the authors, this study is the first of its kind that will examine the moderating effects of training in the context of e-procurement using the Technology Acceptance Model (TAM).

All over the globe, a disappointing performance was witnessed in the e-procurement implementation spectra because many organizations failed to follow the organizational level decision to adopt down to employees' individual acceptance of e-procurement in the organization as found by researchers (Au et al., 2008; Batenburg, 2007; Brandon-Jones & Kauppi, 2018; Chan et al., 2012; Karjalainen & van Raaij, 2011). Even though many organizations have mandated that e-procurement technologies be adopted (Brandon-Jones & Kauppi, 2018), compliance and acceptance by individual employees are difficult to enforce, with annoyed users always bypassing the mandatory processes of procurement (Brandon-Jones, 2017; Katri Karjalainen, Kemppainen, & Van Raaij, 2009; Kauppi & Van Raaij, 2015). Previous research (Brandon-Jones & Kauppi, 2018), indicated that e-procurement adoption by organizations occurred as a result of the employees acceptance of these technologies. Hence, understanding employees intention to accept the technologies for subsequent adoption is crucial (Katri Karjalainen et al., 2009).

Several studies have extended the Technology Acceptance Model (TAM) with different variables based on the needs and context of their studies to explore the relationship between these combined variables (E-TAM) with e-procurement adoption, implementation, usage or performance (Brandon-Jones & Kauppi, 2018; Kademaunga & Phiri, 2019; Kusuma & Pramunita, 2011; Nandankar & Sachan, 2020; Singh & Punia, 2011). However, these researches have produced conflicting results. Some factors revealed positive relationships while others negative. This is consistent with the findings of Padhi & Mohapatra, (2010), who established that the effects of these technology factors are not uniform but depend on each country's specific context. This further justifies the integration of a moderating variable in the TAM model as suggested by Baron and Kenny (1986) and Venkatesh & Davis, (2000). Therefore this study has included training as a moderating variable to examine the relationship between the exogenous and endogenous variables.

## 1.4 Research Questions

The research questions for the study are stated as follows:

1. What are the effects of system related, and security related technology factors on the e-procurement users' behavioural intention to adopt e-procurement in the Nigerian public sector?
2. What are the effects of personal psychology related technology factor on the e-procurement users' behavioural intention to adopt e-procurement in the Nigerian public sector?
3. Does training moderates the relationship between system related; security related; personal psychology related technology factors and e-procurement

users' behavioural intention to adopt e-procurement in the Nigerian public sector?

4. What is the model of technology acceptance that affects users' behavioural intention to adopt e-procurement in the Nigerian public sector?

## 1.5 Research Aim

The ultimate aim for this study is to develop a technology acceptance model that affects user behavioural intention in e-procurement adoption in the Nigerian public sector taking in to account the moderating role of training.

## 1.6 Research Objectives

The following are the objectives of the study:

1. To examine the effects of system related, and security related technology factors on e-procurement users' behavioural intention to adopt e-procurement in the Nigerian public sector.
2. To examine the effects personal psychology related technology factor on e-procurement users' behavioural intention to adopt e-procurement in the Nigerian public sector.
3. To test the moderating effect of training on the relationship between system related; security related; and personal psychology related technology factors on the e-procurement users' behavioural intention to adopt e-procurement in the Nigerian public sector.
4. To develop a model for technology acceptance that affects users' intention to adopt e-procurement in the Nigerian public sector.

## 1.7 Scope of the Research

This study is directed at developing a model of technology acceptance that affects user behavioural intention in e-procurement adoption in the Nigerian public sector. The research covers e-procurement users who according to this research, are the procurement officials and officials of Information and communication Technology (ICT) departments of federal government ministries, agencies, and departments (MDAs) situated in Abuja the federal capital. The choice of these employees is based on the fact that procurement employees are directly involved in the administration and management of the e-procurement process, while the IT officials are responsible for developing, managing, and maintaining the e-procurement systems infrastructure. The study is however limited to users who have attended e-procurement training. The study will utilize both primary and secondary data. The research focus is on individual employee-level acceptance of e-procurement.

## 1.8 Significance of the study

The findings of this study will be useful for the government. The study will contribute to the knowledge about the factors influencing the public sector officials' behavioral intention to adopt e-procurement. This will provide government with a good opportunity for decision making on how to adopt and implement e-procurement in the public sector. The introduction of technophobia and training as contributing and moderating variables respectively will further avail the government the opportunity to make amends on its current policy of staff development and training. This will help in a seamless adoption of electronic procurement systems in the public sector in Nigeria.

From the theoretical point of view, the study contributed by extending the original technology acceptance model (TAM) with five more factors of perceived trust,

perceived compatibility, perceived risk, perceived security, and technophobia. The extended theory (E-TAM) is tested empirically within the context of e-procurement adoption in the Nigerian public sector.

This study contributed further by testing the moderating effects of training on the relationship between the technology adoption factors and the intention to adopt e-procurement within the extended model. This serves as a theoretical contribution since technophobia and the moderating effect of training have not been examined in the context of e-procurement.

## 1.9 Definition of Key Terms

The key terms applied in this study are defined below.

1. **E-procurement:** E-procurement refers to the use of internet-based technologies in every stage of the purchasing process from identification of requirements through payment and potentially to contract management (Waheduzzaman & Rahman, 2020).
2. **Perceived Usefulness:** The measure to which users believe that utilizing an e-procurement system will improve their work performance has been characterized as perceived usefulness (Davis et al., 1989).
3. **Perceived Ease of Use:** The measure to which a person believes that utilizing a given e-procurement system would be devoid of effort is referred to as perceived ease of use (Davis, 1989).
4. **Perceived Trust:** This is the users' psychological state to accept internet risks based on their positive expectations from the service provider's intentions and behaviours (Matemba & Li, 2018).

5. **Perceived Compatibility:** Perceived Compatibility is defined as the measure to which e-procurement is perceived as being consistent with the existing norms, values, past experiences, and needs of the users (Rogers, 1995).
6. **Perceived Risk:** Perceived risk refers to the measure to which a user believes he or she is taking a functional or psychosocial risk by using e-procurement technologies (Luo et al., 2010).
7. **Perceived Security:** Perceived security refers to the subjective likelihood that users believe sensitive and confidential information will not be accessed, stored, or altered by unauthorized individuals during work sessions in a way consistent with their confidence expectations (Luo et al., 2010).
8. **Technophobia:** Technophobia refers to unjustified fear, unpleasant emotions, anxiety, and dislike toward using e-procurement technologies (Osiceanu, 2015).
9. **Training:** Training is described as the coherent attainment of knowledge, skills, and attitudes that, when combined, contribute to enhanced performance in a particular setting (Salas et al., 2006).
10. **Behavioural Intention:** Behavioural intention is defined as a person's willingness, plan, and effort toward reaching his or her goals (Ajzen, 1991).

## 1.10 Organization of the Thesis

The study is divided in to five chapters as explained below:

**Chapter One: Introduction**

This chapter one starts by providing a background in to the study of e-procurement and the public procurement processes. The statement of research problems follow, in which gaps were identified from the previous researches. The identified research gaps were

used to generate the research questions. Then objectives of the research were formulated, and the chapter concludes with the presentation of the scope of the research and the significance of the research.

**Chapter Two: Literature Review**

This chapter presents the literature review of the study. It starts with a background explanation of the meaning of procurement, and subsequently public procurement, and the public procurement reforms in Nigeria. The concept of e-procurement, the public sector e-procurement and the status of e-procurement in Nigeria are discussed. This is followed by the theoretical development, the development of the hypothesis and the conceptual framework of the study.

**Chapter Three: Methodology**

This chapter discusses the methodology to be employed in order to achieve the objectives of the study. The methodology is selected based on the research questions and objectives. The chapter presents the research philosophy/paradigm, research approach and the research design. The chapter also presents the sampling procedure, population, questionnaire design and development, data collection procedure and the statistical tools to be used for the purpose of data analysis.

**Chapter Four: Data Analysis and Results**

This chapter presents the results of the study. The results from the data analysis are presented with a brief discussions provided to answer the research questions. The first part of this chapter provides the results on the general information of the respondents, and the assessment of the consistency and validity of the measurement model. The results of the structural model and hypothesis testing are presented. The second part

discusses in detail the results obtained from the analysis of data. The results are discussed and compared with the results of previous similar studies to make inferences

**Chapter Five: Discussion**

This chapter presents the research findings in relation to the research objectives. The chapter discusses the main findings of the study and compares the findings to those of similar previous studies, drawing conclusions about why particular findings were obtained. The chapter also discusses the four objectives of the study, and presented the final model of the study.

**Chapter Six: Conclusion and Future Recommendations**

This is the final chapter and it provides a recap of the previous discussions followed by a summary of the major findings of the study. Contributions of the study to the body of existing theoretical and practical knowledge in the relevant field are highlighted. Lastly, limitations of the research and recommendations for future research are highlighted.