MEDIATING EFFECTS OF PERCEIVED USEFULNESS AND TRUST BETWEEN INDIVIDUAL FACTORS AND INTENTION TO USE E-TRAINING IN NIGERIAN TECHNOLOGICAL UNIVERSITIES

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DEDICATION

By the special grace of Allah, I dedicate this thesis to my lovely mother and father, Alhaji Umar Alkali and Hajiya Hauwa'u Alkali.

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ABSTRACT

Developments in information technology (IT) have offered universities some sophisticated technological tools and innovative training contents that can be used in delivering training to their employees. However, for successful IT integration in training, employees' positive disposition towards the new system is vital. Although factors, including computer/Internet self-efficacy, interactivity, organisational support, perceived usefulness, perceived ease of use and trust have been used in most studies that investigated technology acceptance, little is known about the effects of interactivity and trust on intention to use e-training. Therefore, this study empirically examines the roles of these factors in determining intention to use e-training within the context of Nigerian technological universities using the technology acceptance model (TAM). Data were collected from 301 employees of five technological universities in Nigeria and partial least squares - structural equation modeling (PLS-SEM) was used in the analysis. Findings of the study reveal that interactivity and trust constructs have positively and significantly influenced employees' intention to use e-training systems. Additionally, perceived usefulness and trust are found to have mediated the relationship between individual factors and intention to use e-training. The Importance-Performance Map Analysis (IPMA) result shows that to predict intention to use e-training in Nigerian technological universities, priorities should be accorded to trust and organisational support. Theoretically, the study has contributed to the understanding of factors affecting intention to use e-training demonstrating the applicability as well as effectiveness of interactivity and trust in predicting intention to use e-training. Methodologically, the study has established the relevance of conducting Importance-Performance Map Analysis (IPMA) in examining intention to use e-training. Practically, the study provides new inputs for successful implementation of e-training systems in universities. It is recommended that future studies investigate the influence of other factors such as subjective norm, enjoyment, and appeal on the intention to use e-training.

ABSTRAK

Perkembangan teknologi maklumat (IT) telah menawarkan universiti beberapa alat teknologi yang canggih dan kandungan latihan inovatif yang boleh digunakan dalam menyampaikan latihan kepada pekerja mereka. Walau bagaimanapun, bagi memastikan integrasi IT dalam latihan berjaya, penerimaan positif pekerja terhadap sistem baru adalah penting. Walaupun faktor-faktor efikasi kendiri komputer/Internet, interaktiviti, sokongan organisasi, tanggapan mudah guna, tanggapan kebergunaan dan kepercayaan telah digunakan dalam kebanyakan kajian yang mengkaji penerimaan teknologi, terlalu sedikit yang diketahui tentang kesan interaktiviti dan kepercayaan terhadap niat untuk menggunakan e-latihan. Oleh itu, kajian ini secara empirikal mengkaji peranan faktor-faktor ini dalam menentukan niat untuk menggunakan e-latihan dalam konteks universiti-universiti teknologi di Nigeria dengan menggunakan model penerimaan teknologi (TAM). Data dikumpulkan daripada 301 orang pekerja daripada lima buah universiti teknologi di Nigeria dan Kuasa Dua Terkecil Separa - Model Persamaan Struktur (PLS-SEM) digunakan dalam analisis ini. Penemuan kajian mendedahkan bahawa interaktiviti dan kepercayaan mempengaruhi niat pekerja secara positif dan signifikan untuk menggunakan sistem e-latihan. Tambahan lagi, tanggapan kebergunaan dan kepercayaan didapati dapat mengantara hubungan antara faktor individu dan niat untuk menggunakan e-latihan. Hasil Analisis Data Prestasi Penting (IPMA) juga menunjukkan bahawa untuk meramalkan niat untuk menggunakan e-latihan di universiti-universiti teknologi Nigeria, keutamaan perlu diberikan kepada kepercayaan dan sokongan organisasi. Secara teorinya, kajian ini telah menyumbang kepada pemahaman tentang faktor-faktor yang mempengaruhi niat menggunakan e-latihan yang menunjukkan kebolehgunaan serta keberkesanan interaktiviti dan kepercayaan dalam meramalkan niat untuk menggunakan e-latihan. Secara metodologi, kajian ini telah membuktikan kaitan melaksanakan Analisis Peta Prestasi Penting (IPMA) dalam menilai niat untuk menggunakan e-latihan. Secara praktisnya, kajian ini menyediakan input baru untuk pelaksanaan sistem e-latihan yang berjaya di universiti. Dicadangkan bahawa kajian masa depan menyiasat pengaruh faktor-faktor lain seperti norma subjektif, keseronokan dan rayuan terhadap niat untuk menggunakan e-latihan.

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LIST OF ABBREVIATIONS

ATBU	-	Abubakar Tafawa Balewa University
CB-SEM	-	Covariance-Based Structural Equation Modeling
CD	-	Compact Disc
CD-ROM	-	Compact Disc, read-only-memory
CFA	-	Confirmatory Factor Analysis
CISE	-	Computer/Internet Self-Efficacy
CR	-	Composite Reliability
DV	-	Dependent Variable
DVD	-	Digital Versatile Disc or Digital Video Disc
E-HRM	-	Electronic Human Resource Management
ET	-	E-Training
ETF	-	Education Tax Fund
FMoE	-	Federal Ministry of Education
FUTA	-	Federal University of Technology Akure
FUTM	-	Federal University of Technology Minna
FUTO	-	Federal University of Technology Owerri
HRM	-	Human Resource Management
ICT	-	Information and Communication Technology
IMPA	-	Importance-Performance Matrix Analysis
INT	-	Intention

IR	-	Interaction
IS	-	Information System
IT	-	Information Technology
IV	-	Independent Variable
KMO	-	Kaiser-Meyer-Olkin
LMS	-	Learning Management System
MAUTECH	-	Modibbo Adama University of Technology
MBA	-	Master of Business Administration
MIS	-	Management Information System
ML	-	Maximum Likelihood
MOOC	-	Massive open online course
MV	-	Mediating Variable
NITDA	-	National Information Technology Development Agency
NUC	-	National Universities Commission
OLS	-	Ordinary Least Squares
OS	-	Organisational Support
PDA	-	Personal Digital Assistant
PE	-	Perceived Enjoyment
PEOU	-	Perceived Ease of Use
PLS	-	Partial Least Squares
PLS-SEM	-	Partial Least Squares Structural Equation Modeling
PU	-	Perceived Usefulness
SEM	-	Structural Equation Modeling
SL	-	Second Life
SN	-	Subjective Norm
TAM	-	Technology Acceptance Model

TETFUND	-	Tertiary Education Trust Fund
TPB	-	Theory of Planned Behaviour
TRA	-	Theory of Reason Action
TRA	-	Theory of Reason Action
TRS	-	Trust
UTAUT	-	Unified Theory of Acceptance of the Use of Technology
VIF	-	Variance Inflation Factors
VLE	-	Virtual Learning Environment

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The goal of this study is to determine the mediating effects of perceived usefulness and trust in the relationship between individual factors and intention to use e-training system in Nigerian technological universities. This chapter therefore, unveils the outline of this research. In particular, it provides a broad description of the research background, the problem of the study, research questions and objectives, scope and limitations, and the significance of the study.

1.2 Research Background

Putting in place a competent workforce is the desire of every modern organisation. In today's knowledge based economy, the influence of an organisation's human resource cannot be overemphasised as its success largely hinges on the performance of its human resource management (HRM) (Masum et al., 2015). To have competitive advantage and comply with the demands of the emerging global labour market infrastructure, organisations must create a mechanism that ensures the availability of a workforce with the prerequisite knowledge, skills, and ability to

effectively deliver within the existing constraints of global competition. According to Koontz and Weihrich (2006), this can be achieved through the provision of extensive training that provides employees with enhanced knowledge of the new socio-economic and technological changes in the contemporary world of competition.

Previous studies have demonstrated the positive effects of training on quality of workers knowledge, skills, capability, and higher employee job performance (Guest, 1997). Likewise, training was established to have improved employees' productivity, compensation, and eagerness to work, while it also helps organisations to increase productivity (Dermol and Čater, 2013). Training has also been associated with improving employees skills which has led to job satisfaction (Arslan and Uzaslan, 2017). However, the traditional face to face method of delivering training has been criticised by some researchers as being inflexible (Thelen et al., 2011) and expensive, considering the costs incur for training venue, tuition, travel, meals and materials (Bajracharya, 2017). The existence of these weaknesses has led to the demand for other alternative training methods. This saw many organisations adopting web-based forms of learning to provide employee training (Kamal et al. (2016).

It is noteworthy to state here that developments in information and communication technology (ICT) have provided organisations with some sophisticated technological tools and innovative training contents that can be used in delivering training to employees. This concept is known as 'e-training'. E-training refers to the training provided by organisations to their employees using the Internet/Intranet, computers, recorded past trainings on CD-ROM or flash drive, and other electronic media to improve their knowledge and skills for better performance. Indicating the increase in the use of e-training, a study has reported that in past decade, organisations have regularly used technology in delivering training programs to employees (Ozturan and Kutlu, 2010). The rise could be attributed to the benefits organisations drive from its use. For instance, Strother (2002) has reported that Rockwell Collins brought down its total training costs by 40% through the conversion of just 25% of its training contents and making it accessible online. Other reported

outcomes of e-training include knowledge development, job satisfaction, and work performance (Byun and Mills, 2011).

Others researchers have reported saving costs, flexibility in training delivery, employee self-paced learning, and availability of lifelong use of training resources within the company as benefits of e-training (Chao and Chen, 2009; Zainab et al., 2015; Amara and Atia, 2016). Meanwhile, e-training is not without weaknesses. The inherent weaknesses of e-training include lack of physical human interaction, eye contact, and the difficulty of some forms of training to be replaced by information technology (IT) (Singh and Singh, 2015). However, in spite of these weaknesses, there is an increasing organisational demand for web-based forms of learning to provide employee training (Kamal et al. (2016).

Nigerian technological universities are key for social, economic, and technological development of the country. Operating in today's knowledge based economy, where education is no longer constrained by boundaries, a competent, highly skillful, and experienced workforce becomes indispensable to these universities. However, despite the huge budgetary allocations these universities enjoyed in the past, they are still battling with large staff that are usually redundant, ageing, untrained, and working in a poorly provided infrastructure (El-Rufai, 2011). This could be responsible for the weakening level of job performance among employees of these universities in Nigeria (Ogbulafor, 2011). The existence of these problems affect the efficiency of the universities employees which will require new thinking and approach to solve.

As earlier pointed out, providing extensive and timely training will enhance the competence of the university employees. However, with low funding, the universities are in a state that will make sustaining the present traditional face to face form of training with large number of employees that need training, coupled with differing work schedules in the universities (Umeagukwu and Ngozi, 2014; Ahmad et al., 2014), remains a serious challenge that must to be overcome by the Nigerian technological universities. Among the existing weaknesses of the traditional face to

face method of training used in these universities is that once an initial training is completed, employees would have limited access to the trainer, and will individually have to keep training documents in case there is need to refer to the training contents. On the alternative, the employees could opt to ask other colleagues questions when uncertain, which could lead to inconsistencies in jobs especially when the staff consulted failed to provide the correct answers.

Moreover, the university employees do have diverse responsibilities, such as teaching, supervision, customer service, information technology support (IT), safety and security, accounts and audit, and student management to discharge daily. Providing training to employees in these job categories could be very difficult and costly especially when using the traditional training method. Could the integration of e-training be necessary and timely to Nigerian technological universities, especially in the face of their present challenges?

If the universities are to address the above-mentioned training related problems through technology integration in their training activities, the universities will have to contain with the existing constraints which may affect successful integration of e-training. Presently, there are challenges that can affect successful implementation of e-training in Nigerian technological universities. Some of these challenges are organisational in nature while others are individual. The organisational challenges include low funding from the government (Nwogo, 2009; Umeagukwu and Ngozi, 2014), inadequate ICT facilities (Baro and Zuokemefa, 2011; Aworanti, 2016), lack of technical staff to handle ICT training and maintenance (Umeagukwu and Ngozi, 2014; Nwezeh, 2010a), unstable electricity supply and low Internet connectivity (Onuka and Durowoju, 2012; Agbetuyi and Oluwatayo, 2012; Adomi, 2005). Unstable electricity and Internet connectivity have made the available ICT facilities in the universities to be dysfunctional (Aduke, 2008).

There are also challenges that are related to employees in these universities. They include low ICT knowledge, skills, and motivation to use technology in teaching and other work activities (Umeagukwu and Ngozi, 2014; Ajadi et al., 2008). Likewise,

technophobia among employees, lack of awareness and interest in ICT use, and lack of intention to learn how to use ICT were identified as factors affecting technology use in the work activities of employees in Nigerian universities (Nkechinyere, 2011; Baro and Zuokemefa, 2011; Aworanti, 2016; Nwezeh, 2010b; Ahmad et al., 2014; Jegede, 2009; Archibong et al., 2010; Folorunso et al., 2006).

Given the fact that e-training is provided through the means of technology, the dual effects of these challenges could affect the ability of the technological universities to deploy the necessary technologies and other resources required for its successful implementation. Specifically, these challenges may also have consequences on employees' ability to use e-training systems in the universities. Since employees remain the major target of every training program of these universities and central to the implementation, use, and success of e-training, understanding what will hinder them from using e-training or create positive behavioural intention to use the system among the employees also becomes indispensable for the technological universities.

According to Ajzen (1991), behavioural intention involves motivational factors that influence behaviour. These factors indicate how hard people are planning to try and how much effort they are planning to exert in order to perform the behaviour. The essence of investigating employees' intention to use e-training in Nigerian technological universities is to be able to understand and explain the important factors influencing behavioural intention towards its usage. Also, such investigation may likely expose the potential areas of employee weaknesses that can hamper use intention so that they can be remedied to ensure all-inclusive e-training acceptance and use. By so doing, the universities can utilise and maximally benefit from using e-training system and thus, meet their training needs within their present constraints. However, at present it is unclear what factors will be most relevant in determining employees' intention to use e-training within the context of Nigerian technological universities.

1.3 Problem Statement

Implementing successful e-training systems in Nigerian technological universities will require strong commitment of the universities in providing the necessary resources for their deployment and other support for employee to adequately use the systems. The ability of the employees and their willingness to accept and adequately utilise and contribute to successful implementation of e-training in the universities is critical. Even though, e-training use in the universities will be mandatory for all employees, there is still the need to examine the factors that will explain why employees intend to use the system or not. In the past, employees have used their labour unions to avoid the implementation of policies and programmes such as e-payment (Ayoola, 2013). Likewise, there are still reported cases of university employees evading the use of technology and prefer the normal way of teaching, supervision, and other administrative activities than using technology (Ahmad et al., 2014). Therefore, one way of ensuring the cooperation of employees in the successful implementing e-training, is to examine and ascertain the factors that will best explain their behavioural intention towards using e-training systems prior to their implementation in these universities. However, no study has provided empirical evidences on the specific factors affecting employees' intention to use e-training within the context of Nigerian technological universities. Meanwhile, there are well documented evidences on factors affecting technology acceptance.

User technology acceptance has been extensively investigated and reported in the extant literature and these investigations have cut across different fields of study, technologies, and contexts. Among the areas these studies were conducted include; learning management systems (LMS) (Baleghi-Zadeh et al., 2017), e-commerce (Awa et al., 2015), mobile education information system (Koç et al., 2016), e-learning system (Al-Gahtani, 2014), e-government (Hamid et al., 2016), electronic banking (Md Nor and Pearson, 2007); teleconferencing (Park et al., 2014), mobile value added services (Kuo and Yen, 2009), cloud computing (Sharma et al., 2016), computers (Teo et al., 2016), websites (Pengnate and Sarathy, 2017), and social networking sites (Choi

and Chung, 2013). These studies and many others have reported some diverse important factors as determinants of individual's intention to use technology.

These factors include the two main constructs of the TAM model, that is, perceived ease of use and perceived usefulness (Baleghi-Zadeh et al., 2017; Mou et al., 2017; Chen et al., 2007b; Wang et al., 2017; Cigdem and Topcu, 2015), computer/Internet self-efficacy (Abdullah et al., 2016; Cheung and Vogel, 2013; Park et al., 2014), trust (Ahmed et al., 2015; Md Nor and Pearson, 2007; Tsai et al., 2011), interactivity (Qutaishat, 2012; Jeon et al., 2017; Lee et al., 2015b), organisational support (Zainab et al., 2015; Al-alak and Alnawas, 2011), attitude (Ortega Egea and Román González, 2011; Dlalisa, 2017; Bakhsh et al., 2017), enjoyment (Tan and Leby Lau, 2016; Wu and Chang, 2005), and subjective norm (Mou et al., 2017; Cigdem and Topcu, 2015; Shum et al., 2009). Others include security (Qutaishat, 2012), image (Phatthana and Mat, 2011), appeal (Pengnate and Sarathy, 2017), playfulness (Wu and Chang, 2005; Pai and Yeh, 2014; Ifinedo, 2017), compatibility (Chen and Hsiao, 2012; Lai, 2017), perceived fit (Wu et al., 2008), service quality (Tan and Leby Lau, 2016), job opportunity (Sharma et al., 2016), perceived risk (Pavlou, 2003; Ortega Egea and Román González, 2011), and satisfaction (Maria Correia Loureiro et al., 2014). It should be noted however, that perceived usefulness, perceived ease of use, computer/Internet self-efficacy, interactivity, organisational support, and trust were reported by majority of the studies reviewed (see Appendix A).

In the case of e-training, researchers have also investigated the factors that influence employee's intention to use e-training. Review of the literature in the area has revealed some important factors have been established as determinants of intention to use e-training. These factors include perceived ease of use (Halim et al., 2016; Ham et al., 2008; Masa'd, 2017) and perceived usefulness (Makgato and Bankole, 2016; Cheng, 2011; Hashim, 2008), computer/Internet self-efficacy (Mooghali and Mirghaderi, 2012; Hester et al., 2016; Zainab et al., 2017) and organisational support (Chatzoglou et al., 2009; Effendi, 2014; Henneke and Matthee, 2012). These four factors were the most mentioned as determinants of individual's intention to use e-training and are tested in the current study. Others include performance expectancy

(Shaqrah and Husain, 2014), effort expectance (Alrawashdeh and Al-Mahadeen, 2013), computer anxiety (Hester et al., 2016; Yoo et al., 2012), social influence (Hester et al., 2016; Alrawashdeh and Al-Mahadeen, 2013), enjoyment (Yoo et al., 2012), access (Hassan, 2011), privacy (Huang et al., 2015), and motivation (Henneke and Matthee, 2012) (see Appendix B).

The researcher's review of the extant literature has shown that investigations into the factors affecting intention to use e-training systems are not as extensive and wide when compared to factors determining technology acceptance. This has confirmed earlier claims by researchers that empirical evidences on factors affecting intention to use e-training are limited in the literature (Ahmed, 2015; Batalla-Busquets and Martínez-Argüelles, 2014; de Melo Pereira et al., 2015). This also goes further to suggest that factors influencing intention to use e-training, that is, computer/Internet self-efficacy, perceived usefulness, perceived ease of use, and organisational support can be expanded by considering other factors. This can be done by borrowing from existing factors established to have influenced intention to use technology especially those relating to e-learning, e-commerce, and e-government.

Several similarities exist between the environments of these systems and that of e-training. The most important similarity is that they all use technology and their services are provided online. Previous studies have confirmed the technological similarity among these systems. For instance, it was reported that providing e-training will require the use of technology which is mediated by Internet (Mohsin and Sulaiman, 2013). Similarly, e-commerce is facilitated by ICT tools such as the Internet, the World Wide Web (WWW), wireless mobile phones, telefax and computers, among other tools (Migiro, 2006). Likewise, it was reported that e-learning requires technology infrastructure like computers, broadband Internet connection (Oreški and Savić, 2013). Also, it was opined that e-government requires the use of web-enabled computer technologies (Evans and Yen, 2006). Now, since the services of these systems require technology to be offered, it also goes further to suggest that users of these systems are expected to possess the basic knowledge, skills, and confidence of using a computer/Internet.

Another similarity is that the environments of these system contain some elements of uncertainty/risk which are common with most information technologies and online platforms (Yee-Loong Chong et al., 2010). According to Horst et al. (2007), users must trust the infrastructure through which online transactions are performed. Previous studies have reported the existence of risks relating to security of personal information and privacy, in e-commerce, e-government, and in e-learning platforms. For example, it was established that about 75% of consumers worry about security and transaction risks when using mobile payment (Lu et al., 2011; Juan et al., 2009). Similarly, Sarabdeen et al. (2014) have reported that security and privacy are important issues users of e-government consider. In the case of e-learning, Merete Hagen and Albrechtsen (2009) have demonstrated the existence of security and risk issues relating to employee information. The issues relating to privacy and security could also be applicable to e-training environment. Therefore, it is expected that employees of these universities may want to use e-training systems only when they feel it is secured, trustworthy, and can serve their specific needs.

Furthermore, there are also similarities among e-training, e-commerce, e-learning, and e-government systems in terms of how their users interact on their platforms. These systems are expected be interactive in nature in order to enable the users get information, send messages, make queries, and get instant responses. Previous studies have demonstrated that interaction is important in e-learning (Kuo et al., 2013), between e-tailers and customers in e-commerce (Merete Hagen and Albrechtsen, 2009), and necessary for promoting not only online engagement of citizens and public servants, but also offline engagement in e-government (Meskell, 2007). Under e-training, interactions among employees and other participants will also be necessary and important as there is absence of face to face contact during training.

Considering the above similarities among these systems, it will make more sense to incorporate interactivity and trust factors among the determinants of intention to use e-training. Since under e-training, face to face contact is eliminated, and the fact that the employees of Nigerian technological universities are used to the traditional face to face training, it is expected that the ability of their employees to communicate,

send messages and get instant response, could cushion the effects of lack of face to face contact under e-training environment and lead to positive perceptions of its interactivity which will affect intention towards e-training use. Likewise, due to the existence of risks relating to privacy and security in online environment as earlier discussed, employees of these universities may likely exercise some reservations regarding e-training use. Already, there are reported cases of employees evading the use of technology in teaching, supervision, and other work activities due to technophobia (Ahmad et al., 2014), inadequate ICT use knowledge and skills (Igbineweka and Ahmed, 2014) and the fear that technology use will make them lose their jobs (Omeire and Omeire, 2014). In line with this, it is expected that the employees will only want to use e-training when they perceive that e-training system will function well, be reliable, secured, trustworthy, and of benefits to them. Since interactivity and trust constructs have mostly been applied to investigate intention to use e-commerce, e-learning, and e-government, their inclusion to examine intention to use e-training will enhance the present understandings on factors influencing e-training intention and therefore add to new knowledge as these factors have not been examined in e-training yet.

Similarly, the researcher also expects that computer/Internet self-efficacy, perceived usefulness, perceived ease of use, and organisational support will be suitable and relevant in examining intention to use e-training in Nigerian technological universities. These factors as earlier discussed, have been mentioned in the majority of the studies that investigated technology acceptance and those that examined intention to use e-training as strong predicators of intention.

Several theories and models exist in the extant literature that are used in providing explanation on individual's adoption or acceptance of technology. These include among others the Innovation Diffusion Theory, Theory Reasoned Action (TRA), Theory of Planned Behaviour (TPB), the Technology Acceptance Model (TAM), the Unified Theory of Acceptance of the Use of Technology (UTAUT), etc. However, among the various theories and models used in explaining technology use intention, the TAM by Davis (1989) is the most popular and most applied among

researchers (Chau, 1996). Review of the extant literature by the researcher has also confirmed that TAM has been the most widely used among past and recent studies on intention to use technology. According to TAM, user perceptions of usefulness (PU) and ease of use (PEOU) determine user's attitudes toward the system and user's attitudes toward using the system determines his/her behavioural intentions, which subsequently lead to the actual system use of the system. Perceived usefulness has been defined as the extent to which an individual believes that using a particular system would enhance his/her job performance, while perceived ease of use is the extent to which an individual believes that using a particular system would be free of physical and mental effort (Davis, 1989). According to Davis (1989), the chronological relationship of belief to attitude to intention to behaviour in TAM, allows researchers to predict usage of new technologies by users.

Venkatesh and Bala (2008), have reported that many studies have used TAM its applicability and explanatory power in the extant literature relating to technology acceptance and adoption. Another reason advanced for its acceptance among researchers is the degree of its flexibility, which can be modified, based on the purposes of the study, enabling it to be extended (Šumak et al., 2011). Hence, many research were conducted to ascertain the effectiveness of TAM in predicting diverse technologies in which researchers include external variables in order to improve its overall predictive validity (Marangunić and Granić, 2015). Previous studies have applied the TAM and found it to be very effective in providing explanation on why users reject or accept particular technologies (Eke, 2011; Krishanan et al., 2016; Abdullah et al., 2016; Lee et al., 2015b; Masa'd, 2017).

This study used the TAM model as underlying model/theory in explaining why the employees of Nigerian technological universities want to use e-training systems. The traditional relationships of the TAM model were used and additional external factors of computer/Internet self-efficacy, interactivity, organisational support, and trust were incorporated into the model. Perceived usefulness and trust are used as mediators in the present study. Perceived usefulness has been used to mediate the relationships between perceived ease of use, computer/Internet self-efficacy,

interactivity, organisational support, and trust and intention on individual basis. Next section presents the research questions and objectives the study will attempt to answer and achieve respectively.

1.4 Research Questions

Based on the stated problems above, and the gap identified in the extant literature, the following questions were set to be answered by this study:

III. What are the relationships between the individual factors (computer/Internet self-efficacy, interactivity, organisational support, and perceived ease of use), perceived usefulness, trust and employees' intention to use e-training in Nigerian technological universities?
IV. Does perceived usefulness mediate the relationship between individual factors and intention to use e-training in Nigerian technological universities?
V. Does trust mediate the relationship between individual factors and intention to use e-training in Nigerian technological universities?

1.5 Research Objectives

The aim of the study was to determine the mediating effects of perceived usefulness and trust between individual factors and intention to use e-training in Nigerian technological universities. Specifically, the study was set to achieve the following objectives: -

I. To determine whether relationships exist between these individual factors (computer/Internet self-efficacy, interactivity, organisational support, and perceived ease of use), perceived usefulness, trust and employees' intention to use e-training in Nigerian technological universities.
II. To determine if perceived usefulness mediates the influence of individual factors on intention to use e-training in Nigerian technological universities.
III. To determine if trust mediates the influence of individual factors on intention to use e-training in Nigerian technological universities.

1.6 Significance of the Study

Nigerian technological universities were established to provide human capital development by producing scientists and engineers with requisite entrepreneurial and leadership skills, and to facilitate scientific and technological knowledge development, incubation and dissemination through collaborative research and establishing linkages with industries locally and globally (Hayden et al., 1992). To achieve these objectives, the universities are required to have a functional and competent workforce who will carry out the various activities of teaching, supervision, research, and others. However, these universities face the problems of weakening employee performance (Ogbulafor, 2011) and low funding (Umeagukwu and Ngozi, 2014; Aworanti, 2016). Previously, employees' performance was reported to have been influenced by training (Dermol and Čater, 2013). However, with low funding, these universities may find it challenging to sustain the traditional face-to-face training method having been established to be expensive (Bajracharya, 2017). Thus, the universities as a matter of urgency need to seek for alternative strategies for providing training to their diverse and large staff base.

Meanwhile, technological developments have made it possible for these universities to provide e-training which is that is flexible (Chao and Chen, 2009), that provides virtual reality and that is cost-effective (Amara and Atia, 2016). The fact that e-training is highly dependent on technology in order to be delivered, caution must be exercised by the universities regarding to its implementation. A part form the need to put in place necessary technologies required for e-training systems use, the employees, whom the training is meant for should be in the position to adequately utilise it. Therefore, the findings of this study will provide information that will offer adequate explanation and understanding of the important factors to be considered prior to implementing e-training. Specifically, this study is of significance to the following.

1.6.1 Knowledge contribution

It is expected that the findings of this scholarly work have filled the gaps existing in the extant literature on factors influencing intention to use e-training by providing empirical evidences on the factors determining intention to use e-training in Nigerian technological universities. Conducting empirical study to examine the factors influencing intention to use e-training has not only filled the gaps in the literature on factors determining intention to use e-training which was reported as inadequate (Fallery et al., 2010; Zainab et al., 2015), but has also provided more insights into the factors explaining employees' behavioural intention towards using e-training within context of Nigerian technological universities. Also, the findings could be relevant to other universities within Nigeria and other African countries considering their nature and cultural similarity. In addition, to the four common factors examined in e-training, that is, computer/Internet self-efficacy, perceived usefulness, perceived ease of use, and organisational support, by incorporating the external constructs of interactivity and trust into the technology acceptance model, the study, as expected has improved the overall predictiveness of the model. Furthermore, the study also demonstrated the applicability and predictive validity of the TAM in investigating intention to use e-training in Nigerian context. Moreover, the study revealed areas of intention to use e-training that will require further investigations by researchers.

1.6.2 Practice

As expected, the findings of this scholarly work will have impact on e-training practice in the following ways:

1.6.2.1 Employees

Examining the factors influencing intention to use e-training will reveal how employees intend to use e-training and the factors explaining their behavioural intention. Knowing the important factors affecting employees' intention to use e-training will enable the universities' management to strengthen them and improve on areas of weaknesses. For instance, even those employees with high computer/Internet self-efficacy and experience in online learning may still require some training and support when it comes to the use of e-training tools and platforms. Providing special training to improve employees' knowledge, skills, and ability will further improve their capacity to use e-training which will lead to its successful implementation. Successful e-training implementation in the universities will in turn provide the employees with flexible training (Amara and Atia, 2016) that will lead to knowledge development, job satisfaction, and improve work performance (Byun and Mills, 2011).

1.6.2.2 University management

Knowing the factors that will facilitate or deter successful implementation of e-training in the technological universities will be useful to the university management. In other words, by explaining employees' behavioural intention to use e-training in the universities, this study will would assist the management of the universities with inputs for planning and decision-making which normally precedes technology integration and drives successful implementation (Jhurree, 2005). For example, findings of this scholarly work have provided some explanation on how employees in Nigerian technological universities arrived at their decision to use e-

training. The findings may further be a reference point for strengthening technology integration in the activities of the universities and for other university management. The findings of the study are also expected to be valuable to management in making decisions in respect of choosing a particular e-training system that will best suit the specific needs of their employees.

With challenges relating to low employee performance and funding, any information that will aid speedy and successful implementation of e-training would be highly appreciated by the management of these universities because it will be timely and very crucial. Successful implementation of e-training will enable the universities to benefit from saving costs relating to employees' travel time and expenditures, flexibility in training delivery, and availability of lifelong use of training resources within the company (Chao and Chen, 2009; Zainab et al., 2015; Amara and Atia, 2016). This will in turn enable the universities develop the knowledge and skills of their employees, and improve job performance (Byun and Mills, 2011; Mohammadyari and Singh, 2015).

1.6.2.3 Other Stakeholders

The Federal Ministry of Education (FMoE) and National Universities Commission (NUC) may find the findings of the study useful for formulation of policies and other regulations for comprehensive continuing professional development of employees in not only technological universities but other public universities as well. Similarly, the findings of the present study may help policy makers to understand the identified areas of e-training that will require priority in the design and implementation in universities. Likewise, developers of training materials, software, and hardware providers will find the findings of this study useful in tailoring their e-training products and related services to universities.

1.7 Scope and Limitations of the Study

There are a total of 43 federal universities spread all over Nigeria (NUC, 2015). Considering the number of these universities, it will be practically impossible for the researcher to cover all in this scholarly work. Since the present study is interested in technology integration, particularly, factors determining intention to use e-training in national public universities, the researcher deemed it suitable to focus on the technological universities among them. In the forty-three universities, five are technological universities and they include Abubakar Tafawa Balewa University (ATBU), Federal Universities of Technology, Akure (FUTA), Federal Universities of Technology, Minna (FUTM), Federal Universities of Technology, Owerri (FUTO), and Modibbo Adama University of Technology, Yola (MAUTECH). Summary of these universities including date established, region, and ownership is provided in Table 1.1. The respondents of the study include both academic and non-academic staff of the five universities as they all require training to improve their knowledge and skills for effective job performance.

Table 1.1: List of National Technological Universities in Nigeria as at 2015

S/N	Name	Region	Ownership	Year Founded
1	Abubakar Tafawa Balewa University, Bauchi (ATBU)	Northeast	Federal	1988
2	Federal University of Technology, Akure (FUTA)	Southwest	Federal	1981
3	Federal University of Technology, Minna (FUTM)	North central	Federal	1982
4	Federal University of Technology, Owerri (FUTO)	Southeast	Federal	1980
5	Modibbo Adama University of Technology, Yola (MAUTECH)	Northeast	Federal	1988

Source: National Universities Commission list of Nigerian universities and year founded (NUC, 2015)

1.7.1 Why Nigerian Technological Universities?

Generally, Nigerian technological universities were established to facilitate new knowledge creation, innovation and technologies for socio-economic development of the country, empowering its citizens, and national integration (Olutola and Olatoye, 2015). According to Hayden et al. (1992), the technological universities in Nigeria are to provide the needed human capital development by producing scientists and engineers with requisite entrepreneurial and leadership skills, and to facilitate scientific and technological knowledge development, incubation and dissemination through collaborative research and establishing linkages with industries locally and globally. To achieve these noble goals, the universities need to attract and hire the most qualified hands in terms of knowledge, skills, and ability to effectively carryout various academic and administrative functions. Likewise, to keep and get the best of their employees, the universities should provide continuous training to improve their competence. As technological universities, they are better positioned and most suitable to use technology in providing training to their employees than other public universities in Nigeria.

From their background, as captured in their objectives above, the Nigerian technological universities should not only be leading in scientific and technological development, but also in their practical applications. In this sense, integrating technology in training employees could set pace for other universities to follow. Also, being funded and assisted by the Federal Government, these universities have fair ICT facilities, and support needed to lead in providing solution to the identified problems of university education through technology (Olutola and Olatoye, 2015). This may include using e-training as compared to other universities who are lagging behind when it comes to technology integration in their activities due to inadequacy of basic ICTs and related skills (Lawal et al., 2014; Oye et al., 2011).

Similarly, these universities are anticipated to have employees (both academic and non-academic) that are professionally inclined towards science and technology and with the basic ICT skills and technical knowledge who are likely to be disposed

towards e-training acceptance and use. In addition, these universities have a national spread from the north, south, west and eastern parts of Nigeria (see Table 1.1 above). This makes them a good sample to study, given their peculiarities in terms of education, knowledge, culture, geography, which could have some impacts on the universities, their employees and perceptions on e-training implementation. Therefore, the above stated reasons, in addition to the researcher's personal experience in technological university as an employee justify the selection of national technological universities in Nigeria for this scholarly work. Next is the conceptual and operational definition of the important terms used in this study.

1.8 Conceptual and Operational Definition of Terms

This part of the chapter provides the conceptual and operational meanings of the terms used in this study. They include the following:

1.8.1 Individual Factors

Individual factors in this study refer to those factors relating to employee's capacity, knowledge and skill, motivation, and beliefs that affect employee's disposition towards using e-training system in Nigerian technological universities. For the present study, individual factors include; computer/Internet self-efficacy, perceived ease of use, interactivity, and organisational support. These factors were arrived at after reviewing literature on the factors influencing technology acceptance and those on intention to use e-training. They were mentioned in most studies as strong determinants of intention to use technology. The researcher expected that these factors will be suitable for examining intention to use e-training in the context of this study.

1.8.2 E-training (ET)

Mohsin and Sulaiman (2013), defined e-training as the process of delivering skills and knowledge with the use of technology that is being mediated by Internet from an instructor to employee. In the present study, e-training refers to e-training as the type of training provided by organizations to their employees through the Internet/ Intranet/Web, computers, recorded past trainings on CD-ROM or flash drive, and other electronic media with a view to improve their knowledge and skills for better performance.

1.8.3 Intention (INT)

Intention to use refers to the degree to which the participants have formulated plans to perform or not perform a specified behavior in the future (Venkatesh et al., 2003). In the context of this study, intention to use e-training is defined as the extent at which the employees of the public universities in Nigeria intend to use e-training system.

1.8.4 Perceived Usefulness (PU)

Perceived usefulness has been defined as the degree to which a person believes that using a particular system would enhance his/her job performance (Davis et al., 1989). Perceived usefulness in this study refers to the degree to which an employee believes that using e-training would enhance his/her skills, task accomplishment, productivity, and make work easy and useful.

1.8.5 Perceived Ease of Use (PEOU)

According to Davis et al. (1989), perceived ease of use is the degree to which a person believes that using a particular system would be free of physical and mental effort. In the present study, perceived ease of use refers to the degree to which an employee believes that using e-training system will be easy to operate, understandable and flexible.

1.8.6 Computer/Internet Self-Efficacy (CISE)

According to Compeau and Higgins (1995), computer self-efficacy refers to an individual's judgment regarding his/her ability to use a computer while Internet self-efficacy refers to the individuals belief regarding his/her capacity to utilise the Internet (Hsu and Chiu, 2004). In this study, computer/Internet self-efficacy mean the extent to which an employee possesses the knowledge, skills, and confidence to perform the basic functions of computer applications like MS Word, Excel, and capacity to use the Internet.

1.8.7 Interactivity (IR)

According to Liu and Shrum (2002), interactivity refers to the degree to which two or more communication parties can act on each other, on the communication medium, and on the messages and the degree to which such influences as synchronized. This study adapted this definition and defined interactivity as the degree to which two or more parties communicating in an e-training environment can act on each other, on the communication medium, and on the messages, and the degree to which such influences are synchronized.

1.8.8 Organisational Support (OS)

Organisational support has been defined as the extent to which top and middle management allocate adequate resources to help employees achieve organisational goals (e.g. top and middle management encouragement, technical support facilities (Lee et al., 2013). In the present study, organisational support is seen from the individual level instead of organisational level and thus defined as the perceptions of employees on organisation or its management commitments towards encouraging the optimal use of e-training system by providing guidance, assistance, and encouragement to employees in order to improve e-training systems use.

1.8.9 Trust (TRS)

Grandison and Sloman (2000) defined trust as the firm belief in the competence of an entity to act dependably, securely, and reliably within a specified context (assuming dependability covers reliability and timeliness). Trust in this study refers to the extent to which employees consider e-training system to be functional, reliable, secure, trustworthy, and in their best interest.

1.9 Structure of this thesis

The structure of this thesis, which shows how it is organised and the processes involved, is captured in Figure 1.1 below

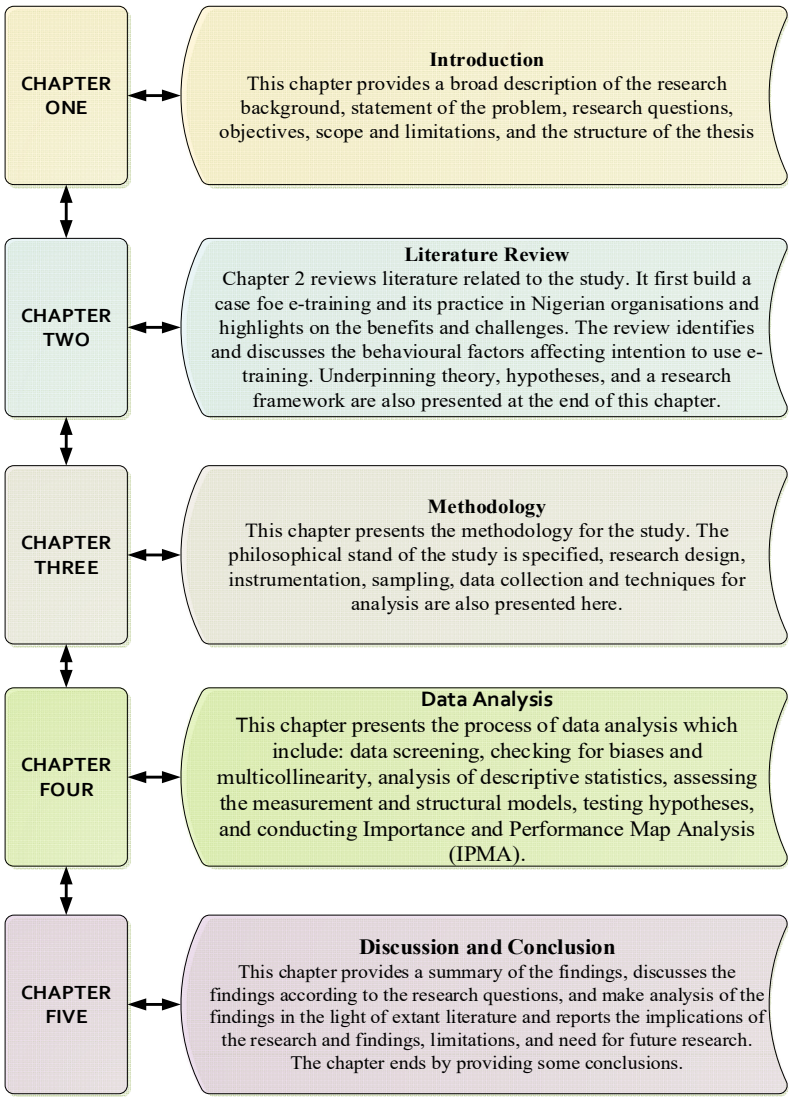

Figure 1.1: Thesis Structure

1.10 Summary

In this chapter, background of the study was presented and the problem of the study was identified and discussed. Similarly, the related research questions and objectives were outlined. The chapter also discussed the significance, scope, and limitations of the study. A structure of the research proposal has equally been presented. The next chapter will provide the conceptual and theoretical background of the study.

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