



UNIVERSITY OF
KWAZULU-NATAL

INYUVESI
YAKWAZULU-NATALI

**ADOPTION AND USE OF ELECTRONIC INSTRUCTIONAL MEDIA
AMONG ACADEMICS IN SELECTED UNIVERSITIES
IN SOUTH WEST NIGERIA**

Alabi, Adefunke Olanike
B.Sc. (Hons.), M. Inf. Sc.

Thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy (Information Studies) in the School of Social Sciences, College of Humanities, University of KwaZulu-Natal, Pietermaritzburg, South Africa.

MARCH 2016

DECLARATION

I, Adefunke Olanike Alabi, declare that:

- (i) The research reported in this dissertation/thesis, except where otherwise indicated, is my original work;
- (ii) This dissertation/thesis has not been submitted for any degree or examination at any other university;
- (iii) This dissertation/thesis does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons;
- (iv) This dissertation/thesis does not contain other persons' writing, unless specifically acknowledged as being sourced from other researchers. Where other written sources have been quoted, then:
 - a. their words have been re-written but the general information attributed to them has been referenced;
 - b. where their exact words have been used, their writing has been placed inside quotations marks, and referenced;
- (v) Where I have reproduced a publication of which I am an author, co-author or editor, I have indicated in detail which part of the publication was actually written by myself alone and have fully referenced such publications;
- (vi) This dissertation/thesis does not contain text, graphics or tables copied and pasted from the Internet, unless specifically acknowledged, and the source being detailed in the dissertation and in the References sections.

.....

Date

Adefunke Olanike Alabi

.....

Date

Supervisor

Professor Stephen Mutula

ABSTRACT

This study was conducted to determine the adoption and use of electronic instructional media among academics in selected universities in South West Nigeria. The study addressed the following research questions: What is the extent of adoption and use of electronic instructional media in selected Nigerian universities? What factors influence adoption and use of electronic instructional media? How do media literacy skills influence adoption and use of electronic instructional media? What is the moderating effect of gender, age and teaching experience on adoption and use of electronic instructional media? What challenges are faced in the adoption and use of electronic instructional media by academics in selected Nigerian universities?

The Unified Theory of Technology Acceptance and Use (UTAUT) and Diffusion of Innovation (DOI) theory were used as the underpinning theoretical lens. The philosophical perspective was based on post-positivism. Quantitative, complemented by qualitative methods were used with the survey research design. The target population of the study consisted of academics and management staff from two purposively selected Nigerian universities in the South West geopolitical zone. Academics were drawn from the faculties of Science, Arts and Technology in the universities that made up this study. From a population of 732 academics, a sample size of 267 was determined using a published table for selecting sample sizes as put forth by Israel (1992). Additionally, the census method was used to reach 11 university management staff members comprising deans of faculties, the university librarians and directors of the Centre for Information and Technology units. The survey questionnaires were used mainly to collect quantitative data from academics while interviews were used to collect qualitative data from university management staff.

The reliability coefficient of the instrument was computed using Cronbach's alpha (α) through a test-retest reliability method. A Cronbach's alpha (α) value of $r = 0.96$ was obtained. Response rates of 80.5% and 90.9% were obtained from the data collected through quantitative and qualitative methods respectively. Quantitative data was analysed using the Statistical Package for Social Sciences (SPSS, version 21) to generate descriptive and inferential statistics while qualitative data was processed using the NVivo 10 package. The ethical aspect or the axiological component of this study was achieved by adhering to the

ethical protocol of the University of KwaZulu-Natal. Permission was obtained from the relevant authorities of the universities which fell under the ambit of this study.

The findings revealed that though academics had adopted various types of electronic instructional media, this did not necessarily translate into extensive usage of such electronic instructional media. The majority of academics, however, regularly pursued innovative ways to incorporate electronic instructional media into their lectures. The findings further showed that academics used personal computers, MS Word, Internet, e-mail, mobile phones, mobile devices, Web resources, e-books and power-point presentations on a daily basis for teaching purposes. Academics used these electronic instructional media mainly for preparing lecture notes, presentation of lectures, producing assignments, course manuals, and communicating with students and colleagues.

The findings also revealed that use of electronic instructional media such as LMS, plagiarism software, interactive whiteboard and social networking sites for teaching purposes was yet to be entrenched among Nigerian academics. The findings showed that facilitating conditions and effort expectancy were the strongest factors influencing adoption and use of electronic instructional media by academics for teaching purposes. The findings showed a significant relationship between media literacy skills and adoption and use of electronic instructional media. Gender and teaching experience, as moderating variables, influenced the adoption and use of electronic instructional media. Findings also revealed that behavioural intention was capable of explaining 8.6% of the variance in adoption and use of electronic instructional media.

The study concluded that Nigerian academics are not using electronic instructional media as much as they should for the delivery of knowledge. The following recommendations were therefore proffered: 1) the universities need to develop a framework for the integration of electronic instruction media into the curriculum; 2) there is need to build capacity and create awareness among academics in relation to the integration of the interactive whiteboard, LMS and plagiarism software in their pedagogy; 3) universities are urged to develop institutional policy on adoption and use of electronic instructional media in order to provide clarity in areas such as standards, strategies, best practices, staff training, infrastructural acquisition, gender equity and data/information security; 4) collaboration between faculty and subject

librarians should be nurtured to create a vibrant and conducive academic and support environment that promote the use of electronic instructional media in teaching and learning.

The originality and contribution of the study is situated in the domain of methodology, theory, practice and policy. For example in the area of methodology, this study's point of departure from extant studies is that it employs the mixed method approach for data collection and stepwise multiple regression was used to determine the best predictor of technology adoption and use among academics. In this regard, the thesis makes a significant contribution towards developing a guideline for deploying instructional technology in universities or any educational setting. From the theoretical perspectives, the study validates UTAUT and DOI from the context of a developing country. The study, therefore, further advances the UTAUT and Roger's diffusion of innovation theory in measuring the precursors of technology adoption and use in any contextual setting. With regard to practice and policy, the study provides an empirical baseline data that can be used as managerial guidelines for policy support, monitoring and evaluation in driving and promoting electronic instructional media adoption and use in Nigerian universities.

ACKNOWLEDGEMENTS

I want to thank the “Awuwo ma se gbe”, my God and my rock, for doing exceedingly more than all I can ever ask or think of. Lord, for all you have done, I say: “Aikho Igama, elihle njengalo ...” There is, indeed, no beautiful name like your name!

To my husband, Olusola Olayinka, I am indeed grateful for your support. Thank you for being my anchor during the tempest, my light in the dark, my compass in the wilderness and GPS all along the way. Thank you for your selflessness. My time, from now on, really belongs to you! To my amiable children, thank you for being your best throughout the time I was away from home. I sincerely thank my parents, all my siblings and their spouses and my family members for their prayers and unfailing support.

To my supervisor and academic mentor, Professor Stephen Mutula, I warmly give my unfailing gratitude for his guidance, support, contribution, constructive criticism and commendation throughout our engagement in this research project. I really cannot thank you enough. I would also like to extend my thanks to my employer, the University of Lagos, Nigeria, for granting me time to be away to pursue this study. I am grateful to the university librarian and my colleagues. I sincerely thank all the staff in the School of Social Sciences here in PMB, South Africa, for their unfailing support. I am highly indebted to these angels: Dr Wole Olatokun, Oladeinde Ogundipe, Dr Benedict Oladele, Dr Yetunde Zaid, Dr Olusoji George and Mr Ogunyade. Thank you for giving me your hand to hold when mine was frail.

I sincerely thank my friends and colleagues: Priscilla, Tunde Omopupa, Simeon, Teju, Faith, Tonye, Lekan and others. This journey would have been so lonesome without you all. I am also indebted to these people: Mrs Yusuf and Mrs Olu Ojo; I acknowledge your love, prayers and support. Dr Adebayo; Mr. and Mrs Adebola Adesina, Mrs Nduka, Dr Adeola Opesade, Pastor and Mrs Odumabo, Engineer Adu, Mrs Akinade, Mrs Adeleke, Dr Akinleye, Mrs Adamolekun and all my neighbours at home.

I express my heartfelt gratitude to my pastor and his wife, Pastor Yemi and Bola Olorunda, my church members (RCCG, Dunamis Faith Assembly) and house fellowship centre here in South Africa). I say a very big thank you for all your love, prayers and support. To everyone who was there for me during my field work: Mrs Kayode, Pastor Ajala, Mr Daniel, Mr

Cornelius, I say a very big thank you. I also thank my research assistants, Yomi and Lekan for their help. I give special thanks to all those who participated in the survey and Dr Alison Jones who edited this thesis.

Many people were there for me throughout this journey but I am prevented by space restrictions from mentioning all. To those whose names are not on this page, I profoundly say *Siyabonga kakhulu!*

DEDICATION

I dedicate this thesis to the rock of ages, the one who laid for me a precious corner stone and told me not to be dismayed; and the wonders of God in my life: Tantoluwa, Olaoluwa Tiwaloluwa; my parents, Chief and Mrs. Richard Olanrewaju Ajayi, for their inestimable support and encouragement throughout this journey. Dad and mum, your worth is far above rubies!

and

to everyone whose Cornerstone is the Rock of Ages

TABLE OF CONTENTS

DECLARATION	ii
ABSTRACT	iii
TABLE OF CONTENTS	ix
LIST OF TABLES	xiv
LIST OF FIGURES	xvii
LIST OF APPENDICES	xviii
LIST OF ABBREVIATIONS.....	xix
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background to the Study.....	1
1.1.1 Global Status of Electronic Instructional Media Uptake in University Environments.....	3
1.1.2 Study Site	4
1.2 Statement of the Problem.....	6
1.3 Research Objectives	8
1.4 Research Questions	8
1.4.1 Research Hypotheses	9
1.5 Significance of the Study	9
1.6 Delimitation of the Study.....	10
1.7 Preliminary Literature Review	11
1.8 Theoretical Lens for the Study	13
1.9 Methods	14
1.10 Thesis Outline	15
CHAPTER TWO	17
THEORETICAL FRAMEWORK.....	17
2.1 Introduction.....	17
2.1.1 Technology Adoption, Acceptance and Use Models/Theories.....	18
2.2 Unified Theory of Technology Acceptance and Use (UTAUT).....	19

2.3 Diffusion of Innovation Theory	27
2.4 Theory of Reasoned Action (TRA)	31
2.5 Technology Acceptance Model (TAM).....	33
2.6 The Combined TAM and TPB (C-TAM-TPB).....	37
2.7 Motivational Model (MM).....	38
2.8 Summary	39
CHAPTER THREE.....	41
LITERATURE REVIEW.....	41
3.1 Introduction.....	41
3.2 Adoption and Use of Electronic Instructional Media in Universities	42
3.3 Factors Influencing Adoption and Use of Electronic Instructional Media	51
3.3.1 Performance Expectancy.....	51
3.3.2 Effort Expectancy	55
3.3.3 Social Influence	56
3.3.4 Facilitating Conditions.....	57
3.3.5 Behavioural Intention (BI)	58
3.3.6 Observability, Compatibility and Trialability	60
3.4 Media Literacy Skills and Adoption and Use of Electronic Instructional Media	64
3.5 The Influence of Moderating Factors on Adoption and Use of Electronic Instructional Media.....	67
3.6 Challenges of Adoption and Use of Electronic Instructional Media among Academics	69
3.7 Broader issues	73
3.7.1 E-Learning.....	73
3.7.2 Digital and Intra-Organisational Digital Divide	75
3.8 Summary.....	78
CHAPTER FOUR.....	80
RESEARCH METHODOLOGY.....	80
4.1 Introduction.....	80

4.2 Research Paradigm	82
4.2.1 Post-positivism.....	84
4.3 Research Approaches	86
4.4 Research Design.....	87
4.5 Population of the Study	89
4.6 Sampling Procedure.....	90
4.7 Data Collection Techniques	94
4.8 Survey Questionnaires	96
4.9 Validity and Reliability of Instrument.....	98
4.10 Data Collection Procedure	100
4.11 Data Analysis	101
4.12 Ethical Issues.....	105
4.13 Summary.....	106
CHAPTER FIVE	107
DATA ANALYSIS AND PRESENTATION OF FINDINGS	107
5.1 Introduction.....	107
5.2 Response Rate	108
5.3 Demographic Profile of Respondents.....	109
5.4 Data Analysis based on Research Questions	111
5.4.1 Extent of Adoption and use of Electronic Instructional Media among Academics in Nigerian Universities.....	111
5.5 Factors Influencing Adoption and Use of Electronic Instructional Media among Academics.....	126
5.6 Influence of Media Literacy Skills on Adoption and Use of Electronic Instructional Media.....	140
5.7 Moderating Effect of Gender, Age and Teaching Experience on Adoption and Use of Electronic Instructional Media.....	141
5.8 Challenges of Adoption and Use of Electronic Instructional Media.....	145

5.9 Hypothesis Testing	149
5.9.1 Research Hypothesis 1	150
5.9.2 Research Hypothesis 2	151
5.9.3 Research Hypothesis 3	153
5.10 Summary of Findings	155
CHAPTER SIX.....	157
INTERPRETATION AND DISCUSSION OF FINDINGS	157
6.1 Introduction.....	157
6.2 Demographic Characteristics of Respondents	157
6.2.1 Response Rate	158
6.3 Adoption and Use of Electronic Instructional Media among Academics in Nigerian Universities.....	159
6.3.1 Types of Electronic Instructional Media Adopted by Academics in Nigerian Universities.....	159
6.3.2 Extent of Adoption and Use of Electronic Instructional Media by Academics	161
6.3.3 Use of Electronic Instructional Media by Academics	161
6.3.4 Behavioural Intention of Academics on the Adoption and Use of Electronic Instructional Media	167
6.3.5 Trialability of Electronic Instructional Media among Academics.....	169
6.5 Influence of Media Literacy Skills on Adoption and Use of Electronic Instructional Media.....	179
6.6 Moderating Effect of Gender, Age and Experience on Adoption and Use of Electronic Instructional Media	183
6.7 Challenges of Adoption and Use of Electronic Instructional Media.....	191
6.8 Summary.....	199
CHAPTER SEVEN.....	201
SUMMARY, CONCLUSION AND RECOMMENDATIONS	201
7.1 Introduction.....	201
7.2 Summary of Chapters in the Thesis	201
7.3 Summary of Findings	203

7.3.1 Demographic Profile of Respondents	203
7.3.2 Extent of Adoption and Use of Electronic Instructional Media among Academics	204
7.3.3 Factors Influencing Adoption and Use of Electronic Instructional Media.....	207
7.3.4 Influence of Media Literacy Skills on Adoption and Use of Electronic Instructional Media	209
7.3.5 Moderating Effect of Gender, Age and Experience on Adoption and Use of Electronic Instructional Media.....	209
7.3.6 Challenges of Adoption and Use of Electronic Instructional Media	210
7.4 Conclusion	211
7.4.1 Characteristics of the Respondents	211
7.4.2 Extent of Adoption and Use of Electronic Instructional Media among Academics	212
7.4.3 Factors Influencing Adoption and Use of Electronic Instructional Media.....	212
7.4.4 Influence of Media Literacy Skills on Adoption and Use of Electronic Instructional Media	212
7.4.5 Moderating Effect of Gender, Age and Teaching Experience on Adoption and Use of Electronic Instructional Media	213
7.4.6 Challenges of Adoption and Use of Electronic Instructional Media	213
7.4.7 Overall Conclusion	213
7.5 Recommendations	214
7.5.1 Adoption and Use of Electronic Instructional Media	214
7.5.2 Factors Influencing Adoption and Use of Electronic Instructional Media.....	215
7.5.3 Media Literacy Skills of Academics	216
7.5.4 Moderating Effect of Demographic Variables on Electronic Instructional Media Adoption and Use	216
7.5.5 Challenges of Adoption and Use of Electronic Instructional Media	216
7.6 Contributions and Originality of the Study.....	217
7.6.1 Contribution to Theory.....	218
7.6.2 Contribution to Policy	218
7.6.3 Contribution to Practice	219
7.6.4 Contributions to Methodology	219
7.7 Suggestion for Further Research	219
References	221

LIST OF TABLES

Table 1.1	Research Questions Addressing the Gap in Literature	12
Table 1.2	Mapping Research Questions to the Constructs of the UTAUT and DOI	14
Table 4.1	Sampling Sizes for Each Institution	93
Table 4.2	Sampling Procedure	93
Table 4.3	A Test of Reliability of the Key Constructs of the Survey Instrument	99
Table 4.4	Data Sources and Data Analysis Strategies	104
Table 5.1	Response Rate	109
Table 5.2a	Demographic Profile of Respondents	110
Table 5.2b	Profile of Interviewees	111
Table 5.3	Extent of Adoption and Use of Electronic Instructional Media by Academics	116
Table 5.4	Summary of Interview Responses on Extent of Adoption and Use of Electronic Instructional Media	118
Table 5.5	Frequency of Use of Electronic Instructional Media	119
Table 5.6	Behavioural Intention of Academics towards Adoption and Use of Electronic Instructional Media	121
Table 5.7	Summary of Interview Responses on Attitude of Academics towards Use of Electronic Instructional Media	123
Table 5.8	Summary of Interview Responses on Advantages of Using Electronic Instructional Media	124
Table 5.9	Trialability of Electronic Instructional Media among Academics	125
Table 5.10a	Stepwise Multiple Regression Analysis Showing Contributions of Predictors of Adoption and Use of Electronic Instructional Media	127
Table 5.10b	Stepwise Multiple Regression Analysis Showing Excluded Variables from Predictors of Adoption and Use of Electronic Instructional Media	128
Table 5.10c	Model Summary Showing Prediction Level of the Constructs	128
Table 5.10d	Predictors of Adoption and Use of Electronic Instructional Media	129
Table 5.10e	Regression Analysis on Overall Performance of Predictors of Adoption and Use Electronic Instructional Media	129
Table 5.11	Summary of Interview Responses on Factors Influencing Adoption and	131

	Use of Electronic Instructional Media	
Table 5.12	Summary of Interview Responses on Institutional/ICT Policy on Adoption and Use of Electronic Instructional Media	133
Table 5.13	Summary of Interview Responses on Facilitating Conditions for Adoption and Use of Electronic Instructional Media	134
Table 5.14	Summary of Interview Responses on Capacity Building Programmes	135
Table 5.15	Summary of Interview Responses on Budgetary Allocation for Acquisition of Electronic Instructional Media	137
Table 5.16	Summary of Interview Responses on the Role of the Library in Facilitating Adoption and Use of Electronic Instructional Media	138
Table 5.17	Summary of Interview Responses on Assessment Methodologies on Use of Electronic Instructional Media	140
Table 5.18	Regression Analysis on Relationship between Media Literacy Skills and Adoption and Use of Electronic Instructional Media	140
Table 5.19a	Moderating Effect of Gender on the Relationship between the Independent Variables and Dependent Variable	142
Table 5.19b	Moderating Effect of Age on the Relationship between the Independent Variables and Dependent Variable	143
Table 5.19c	Moderating Effect of Teaching Experience on the Relationship between the Independent Variables and Dependent Variable	144
Table 5.20	Challenges of Adoption and Use of Electronic Instructional Media by Academics in Nigerian Universities	146
Table 5.21	Summary of Interview Responses on Challenges of Adoption and Use of Electronic Instructional Media	148
Table 5.22	Summary of Interview Responses on Solution to the Challenges of Adoption and Use of Electronic Instructional Media	149
Table 5.23	Regression Analysis of the DOI Constructs and Adoption and Use of Electronic Instructional Media	150
Table 5.24	Relative Contribution of DOI Constructs to Adoption and Use of Electronic Instructional Media	150
Table 5.25	Regression Analysis of the UTAUT Main Constructs and Behavioural Intention	151
Table 5.26	Relative Contribution of UTAUT Main Constructs on Behavioural	152

	Intention	
Table 5.27	Regression Analysis between Behavioural Intention and Adoption and Use of Electronic Instructional Media	153
Table 5.28	Relative Contribution of Behavioural Intention to Adoption and Use of Electronic Instructional Media	154
Table 5.29	Regression Analysis of Demographic Variables (Gender, Age, Teaching Experience) and Adoption and Use of Electronic Instructional Media	154
Table 5.30	Relative Contribution of Demographic Variables (Gender, Age, and Teaching Experience) on Adoption and Use of Electronic Instructional Media	155

LIST OF FIGURES

Figure 1.1	Map of Nigeria Showing the South Western States	5
Figure 2.1	The Unified Theory of Acceptance and Use of Technology Model	21
Figure 2.2	Theory of Reasoned Action	32
Figure 2.3	Technology Acceptance Model	34
Figure 2.4	Combined TAM and TPB (C-TAM-TPB)	37
Figure 2.5	The Motivational Model	39
Figure 4.1	Research Onion	82
Figure 5.1a	Types of Electronic Instructional Media (Hardware) Adopted by Academics in Nigerian Universities	112
Figure 5.1b	Types of Electronic Instructional Media (Software) Adopted by Academics in Nigerian Universities	113
Figure 5.1c	Types of Electronic Instructional Media (E- Resources) Adopted by Academics in Nigerian Universities	114
Figure 5.1d	Types of Electronic Instructional Media (Social Networking Sites) Adopted by Academics in Nigerian Universities	115
Figure 5.2	Extent of Adoption and Use of Electronic Instructional Media by Academics	118
Figure 5.3	Attitudes of Academics towards Use of Electronic Instructional Media in Teaching	122
Figure 5.4	Factors Influencing Adoption and Use of Electronic Instructional Media	130
Figure 5.5	Institutional/ICT Policies on Adoption and Use of Electronic Instructional Media	132
Figure 5.6	Capacity Building Programme on Adoption and Use of Electronic Instructional Media	135
Figure 5.7	Budgetary Allocation for Acquisition of Electronic Instructional Media	136
Figure 5.8	Challenges of Adoption and Use of Electronic Instructional Media	147

LIST OF APPENDICES

Appendix 1	Questionnaire	278
Appendix 2	Interview Guide	287
Appendix 3	Ethical Clearance	290
Appendix 4	Informed Consent Letter for Survey	291
Appendix 5	Informed Consent Letter for Interview	293
Appendix 6	Request for Permission (UI)	295
Appendix 7	Approval to Carry Out Research (UI)	296
Appendix 8	Request for Permission (CU)	297
Appendix 9	Approval to Carry Out Research (CU)	298
Appendix 10	Purpose of Use of Electronic Instructional Media	299
Appendix 11	Editor's Report	303
Appendix 12	Item Total Correlation	304

LIST OF ABBREVIATIONS

A	Attitude
AAU	Association of African University
ABU	Ahmadu Bello University
AERA	American Educational Research Association
ATB	Attitude Towards Behaviour
BI	Behavioural Intention
CD	Compact Disk
CEIT	Computer Education and Instructional Technology
CSF	Critical Success Factors
C-TAM-TPB	Combined Technology Acceptance Models and the Theory of Planned Behaviours
CU	Covenant University
DOI	Diffusion of Innovation Theory
DVD	Digital Versatile Disk
EE	Effort Expectancy
EM	Extrinsic Motivation
ERIC	Education Resources Information Centre
GUI	Graphic User Interface
HBCU	Historically Black Colleges and Universities
IDT	Innovation Diffusion Theory
IM	Intrinsic Motivation
IS	Information Systems
IT	Information Technology
JSTOR	Journal Storage
LMS	Learning Management System
MM	Motivational Model
MMR	Moderated Multiple Regression Analysis
MOODLE	Modular Object-Oriented Dynamic Learning Environment
MPCU	Model of PC Utilization
PBC	Perceived Behavioural Control
PDA	Personal Digital Assistant
PE	Performance Expectancy

PEOU	Perceived Ease of Use
PU	Perceived Usefulness
SCT	Social Cognitive Theory
SI	Social Influence
SN	Subjective Norm
SPSS	Statistical Package for the Social Sciences
TAM 2	Technology Acceptance Model 2
TAM	Technology Acceptance Model
TRA	Theory of Reasoned Action
TTF	Task Fit Technology
UCI	University College Ibadan
UI	University of Ibadan
UK	United Kingdom
UKZN	University of KwaZulu-Natal
UTAUT	Unified Theory of Acceptance and Use of Technology
UUM	Universiti Utara Malaysia
VC	Vice Chancellor
VCR	Video Cassette Recorder
WBI	Web Based Instruction

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

A worldwide trend is increasing reliance on the use of electronic instructional media in teaching and learning (Akindoju, Nwagwu, Akintoye, Avoseh and Aregbede, 2014; COM, 2003). Maithya and Ndebu (2011) describe the integration of technology into teaching and learning in the educational sector as an innovation. Clarke (2003) considers technology adoption and use inevitable for universities. The importance of electronic instructional media in leveraging the potential of emerging technologies need not be overemphasised because worldwide, academics are increasingly dependent on different types of information technologies for teaching, research and consultancy services in the universities (Odero-Musakali and Mutula, 2007). The ubiquitous nature of technological advancement has transformed the educational landscape as a result of convergence of media and technologies (Aqili and Nasiri, 2010) and the possibilities offered by Internet (Abaidoo and Arkorful, 2014). These developments are putting pressure on academics to discontinue from using the chalk and lecture method of teaching in preference for electronic instructional media. Consequently academics now have to design learning environments that can accommodate and quench the thirst of technology-savvy students in their learning endeavours.

Various scholars acknowledge that academics can derive a lot of benefits from using electronic instructional media in teaching (Schneckenberg, 2010; Shaikh, 2009; Bhattacharya and Sharma, 2007; Shaheeda, Dick and Laura, 2007; Valasidou, Sidiropoulos, Hatzis and Bousiou-Makridou, 2005; Curran, 2004; Department of Education, 2001; Neo and Neo, 2000; Ng and Komiya, 2000). These benefits include access to information resources; reduction in global digital divide; improved quality of teaching; communication with experts and peers all over the world; knowledge sharing; networking; access to best practices across the globe; access to course materials that foster teaching; exposure to culture of excellence in teaching and learning; developing quality graduates and citizens required in an information society, and provision of digital communication channels for increased collaboration. Brown, Thomas, van der Merwe and van Dyk (2008) submit that academics can also interact with their students by providing them with immediate feedback. Above all, electronic instructional

media offer possibilities for e-learning through computers, mobile phones, CDs, DVDs, video conferencing, interactive board, e-mail, websites, satellite broadcasts and the Internet.

Many terminologies have been used to describe the use of technology in teaching. These terms include learning technologies and electronic media (Said, Lin and Jim, 2009); e-learning; virtual or web based learning; instructional technology; multimedia; educational technology; information and communication technology; new media; emerging technologies. Similarly, numerous definitions of the term 'instructional media' abound in literature. Wamalwa and Wamalwa (2014) describe instructional media as all the resources used to implement instruction or facilitate teaching and learning. In the past, these resources were basically chalkboards, hand-outs, charts, slides, overheads projectors, realia and videotapes. However, the evolution of information and communication technologies has brought in electronic instructional media, which consist of resources used to communicate, create, disseminate, store, and manage information (Obiri-Yeboah, Fosu and Kyere-Djan, 2013). To Dick and Carey (2001), electronic instructional media include computers, digital video disks (DVDs), CDROMs, the Internet and interactive video conferencing. In the view of Saaid (2010), electronic instructional media include laptops, videos, multimedia projectors, smart boards, specialised software, online discussions, online quizzes, email, simulation software, Microsoft office and digital images to the range of electronic instructional media. The range is not limited to just hardware and software, but also networks and all sorts of media for collection, storage, processing, transmission and presentation of information (World Bank, 2014).

In the context of this study, 'electronic instructional media' refers to hardware such as personal computers, multimedia projectors, scanners, mobile phones, mobile devices, CD/DVDs; software such as word processors; presentation software, spreadsheets, learning management software, plagiarism software, electronic resources such as e-books, e-journals, Internet, e-mail, electronic databases, and social networking sites such as Facebook, Twitter, Wikis, Blog and You Tube. It is also imperative to state that the study is situated in the realm of library and information science discipline because the library is dedicated to provision of knowledge (Tumuhairwe, 2013). Additionally, the library is committed to "use of cutting edge technologies to provide access to resources and services in support of learning, teaching, and research" in the academe (Nfila, 2007:1).

1.1.1 Global Status of Electronic Instructional Media Uptake in University Environments

The information society dispensation obligates academics to use diverse electronic instructional media to increase creativity and efficiency (Owusu-Ansah, 2013). Unfortunately, as Schneckenberg (2010) points out, many universities especially in developing countries have not thoroughly experienced the benefit of technology in teaching, particularly in the area of e-learning. There are various reasons, for instance, Greenhalgh, in Masiello, Ramberge and Kirsti (2005) blames many universities for not seeking to understand the framework that drives technology adoption and use among academics, especially for teaching. Besides, most academics are using electronic instructional media for communication purposes, rather than as a component of teaching (Unwin, 2008). Many other researchers (McKenzie, Mims, Bennett and Waugh, 2000; Ntemana and Olatokun, 2012; Edumadze and Owusu, 2013) attribute the low uptake in adoption and use of electronic instructional media in the academe to several reasons that include among others:

- academics not being confident or competent users of electronic instructional media;
- poor access to the network by academics ;
- academics' dispositions towards change or innovation;
- academics' unwillingness to move out of comfort zones and develop new skills and competencies;
- difficulty in use of technology; and,
- universities not paying attention to how electronic instructional media can become an integral part of teaching.

Globally, a variety of initiatives have been developed to enhance adoption and use of electronic instructional media in universities in Europe, US, Asia, Australia and Africa as identified in literature (KENET 2014; Oye, Salleh and Iahad, 2011; Cerniewicz, Ravjee and Mlitwa, 2007; Farrell, 2007; Hare, 2007; Isaacs 2007; Mangesi, 2007; Odero-Musakali and Mutula, 2007). For example, Oye, Salleh and Iahad (2011) identify some of the initiatives to include education technology strategy in Northern Ireland; national grid for learning initiative in Scotland; e-learning strategy in Wales; information economy initiative in Australia and online digital content initiative in Korea. In Africa, a few countries are following suit. In Kenya, the Kenya Education Network (KENET) and African Virtual University (AVU) respectively are some of the strategies driving adoption and use of technology in teaching

(KENET, 2014; Farrell, 2007). The University of Stellenbosch in South Africa has an e-Campus Strategy that enhance e-learning while, at the University of Pretoria, there is Telematic Learning and Education Innovation Strategic Plan 2002-2005, which serves as the framework for ensuring use of technology to improve quality of teaching and learning practices. In Tanzania, there exists an eSchools Programme at the secondary school level. This programme was developed to facilitate e-learning in teacher training colleges (Hare, 2007). In Nigeria, NUNET is an initiative that was developed to provide internet connections to all Nigerian universities. Despite these several initiatives, previous scholars (Zhao, Pugh, Sheldon and Byers, 2002) show that adoption and use of electronic instructional media depends on the innovator, the innovation and context.

1.1.2 Study Site

Nigeria has its geographical location on the Gulf of Guinea in Western Africa. It is located between Benin in the West, Cameroon in the East and shares its border in the North East with Chad and Niger to the North West. Nigeria is organised into 36 states and a federal capital territory (FCT) in Abuja. As a result of the oil boom years of the 1970s, tertiary level of education was expanded to reach every sub-region of Nigeria. The federal and the state governments were previous owners of universities. Recently, licenses have been granted to individuals, corporate bodies and religious bodies to establish private universities in the country. The country is divided into six geopolitical zones: North-Central, North-East, North-West, South-East, South-South and South-West.

The study was carried out in south-west Nigeria. This geopolitical zone comprises Lagos, Ogun, Oyo, Osun, Ondo and Ekiti states. It is also known as the south western geographical zone. The area lies between longitude 2°31'1" and 6°00'1" East and Latitude 6°21'1" and 8° 37'1"N (Agboola, 1979; Faleyimu, Agbeja and Akinyemi, 2013) with a total land area of 77,818 square kilometers and a projected population of 140,003, 542 (Nigeria Census, 2006). The study area is bounded in the east by Edo and Delta states, in the north by Kwara and Kogi states, in the west by the Republic of Benin and in the south by the Gulf of Guinea. The ethnic constituent of the south west is the Yoruba people. The south-west was chosen because a larger percentage (30%) of the 129 universities in Nigeria is situated in the south-west geographical zone (NUC Bulletin, 2014).

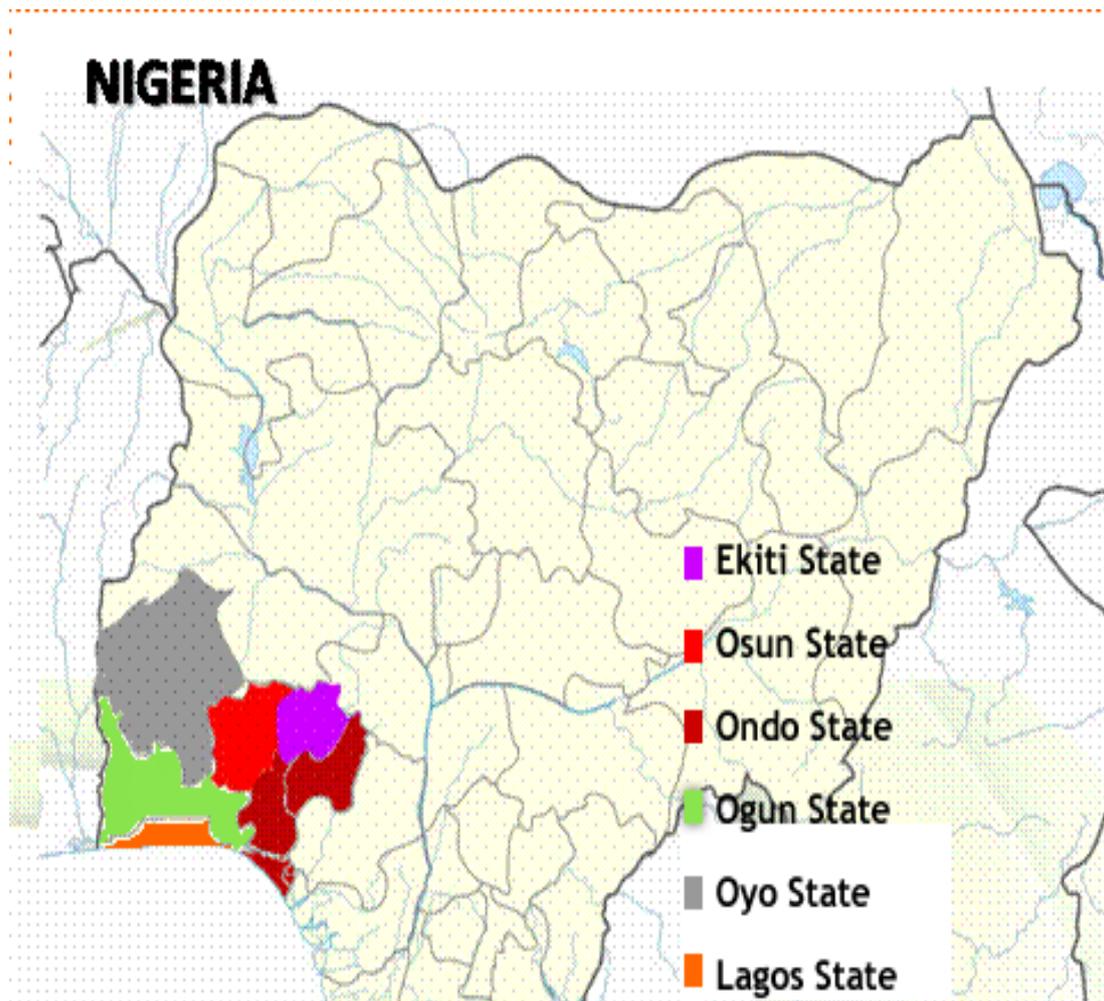


Figure 1.1: Map of Nigeria showing the South Western States (Faleyimu, Agbeja, and Akinyemi, 2013)

The study covers two universities: University of Ibadan and Covenant University. The University of Ibadan started as University College, Ibadan (UCI) in Oyo state in January, 1948. It was affiliated to the college of the metropolitan University of London. In 1962, it became independent of London University and, since then, has become a fully-fledged University of Ibadan (UI). The Vice-Chancellor is the executive head of the university and he provides leadership, which invariably determines the academic standards of the university.

Covenant University was established in 2002 as a result of the reformation in the educational sector in Nigeria. By virtue of this reformation, the government's monopoly of the provision and management of education ceased (Ajayi and Ekundayo, 2008). The evolution of the private universities in Nigeria can be traced to the first and second republics (Oloyede and

Adekola, 2010). The first and the second republic refer to the eras of two ex-Presidents of Nigeria: Shehu Shagari's administration (1979-1983) and Olusegun Obasanjo (1999-2007) respectively. Covenant University (CU) was established during President Olusegun Obasanjo's tenure. It is located in Ogun State, Nigeria. CU, like any other private university in Nigeria, is licensed to provide university education in Nigeria at the undergraduate and post graduate levels. In this institution, the head of faculty/school is addressed and known as deputy dean.

According to Ajayi and Ekundayo (2008), CU and other private universities in Nigeria were established for these reasons: to align with practices in other parts of the world where private and public sectors of the economy are involved in the provision and management of university education; to increase access to university education; to address the problem of scarce educational resources and improve the quality of university education. In general, these universities have a mandate to ensure instructional delivery that is capable of enhancing the quality of graduates.

1.2 Statement of the Problem

Universities in less developed nations have not just lagged behind their counterparts in developed nations economically and socially but more recently, technologically (Nyirongo, 2009). Although several attempts have been made to bridge the digital divide between the developed and developing nations at various levels, the integration of technology into teaching and learning among Nigerian academics remains low (Ayoola Ikuenomore and Eyengh, 2010; Yusuf and Onasanya, 2004). With the increasing advocacy that technology offers the possibilities for solutions to some of the problems in education, universities world over are altering their teaching approaches. Mlitwa (2007) argues that universities can only remain competitive by using innovative technologies in teaching and learning. Yet, many academics still rely largely upon traditional lecture-based, chalk and talk method of teaching (Akuegwu, Ntukidem, Ntukidem and Jaja 2011; Djajalaksana, 2011; Adomi and Kpangban, 2010; Csapo and Wilson, 2001). As such, Nigerian universities are yet to reap the full benefits of e-learning.

There have been previous efforts to elucidate the underlying determinants of technology use in teaching among academics but these studies have made no attempt to differentiate between the types of electronic instructional media adopted and used by academics; nor have they

evaluated the extent of adoption and efforts made by academics to incorporate technology into teaching. Previous studies have examined factors that can promote or hinder technology adoption and use in many contextual setting including education. Such studies have been based on attitude of academics (Mbengo, 2014; Hue and Ab Jalil, 2013; Elsaadani, 2012; Onasanya, Shehu, Oduwaiye and Shehu, 2010; Intaganok and Waterworth, 2008; Newton, 2003); gender (Owusu-Ansah, 2013; Elsaadani, 2012; Papaioanno and Charalambous, 2011; Olatokun, 2007; Agbonlahor, 2005); perception (Straub, 2009; Sugar, Crawley and Fine, 2004); motivation to use technology in teaching (Gautreau, 2011; Osika and Buteau, 2009; Agbonlahor, 2006; Medlin, 2001); technology competence of academics (Badau and Sakiyo, 2013; Mingaine, 2013; Tsvere, Swamy and Nyaruwata, 2013; Archibong, Ogbiji and Anijaobi-Idem, 2010). In terms of scope and areas of coverage, studies (Adewole-Odeshi, 2014; Kar, Saha and Mondal, 2014; bt Osman, Choo and Rahmat, 2013) focus on technology adoption and use among students and teacher education (Avidov-Ungar and Iluz, 2014); adoption and use of LMS (Alharbi and Drew, 2014; Ishtaiwa, 2011; Uys, Dalgarno, Carlson, Crampton, and Tinkler, 2011) and virtual learning (van Raaij and Schepers, 2008).

In terms of methodology, quantitative approach has been used extensively to understand technology adoption and use (Alharbi and Drew, 2014; Al-Gahtani, 2014, Attis, 2014; Ntemana and Olatokun, 2012). Many previous studies have made use of online questionnaire as data collection technique (Martin, Parker and Allred, 2013; Joseph, 2008; Less, 2003). Furthermore, according to Igbaria (as cited in Nair and Das, 2011), there are several studies in the pool of literature, where most Information Systems (IS) researchers used TAM as theoretical foundation to conduct research on technology adoption and use. Some of such studies include those of Abu-Shunab and Ababneh (2015); Attis (2014); Mbengo (2014) Luan and Teo (2009); Teo, Luan and Sing (2008) to mention a few. Although a consensus has been formed on the idea that certain technological characteristics, such as relative advantage, compatibility to just mention a few, have predictive power, but there is disagreement about which technological characteristics are the best predictors (Ntemana and Olatokun, 2012; Usluel, Aşkar and Baş, 2008). From all indication, technology adoption and use is determined by several interrelated factors. Therefore, getting academics to use electronic instructional media in teaching remains a key challenge for universities (Gates, Moore, Oberlin, Rusiecki and Wascom, 2000). Moreover, studies providing baseline data that could serve as managerial guidelines for institutional policy formulation on use of technology

in university teaching especially from the context of less developed nation is conspicuously inadequate.

The study makes significant contribution to theory by illuminating the predictive power of the UTAUT and DOI. It also sought to extend the UTAUT with an additional variable, media literacy skills. The outcome of this study will help identify the key concepts related to adoption and use of technology in teaching. The study would be beneficial to directors of centre for information technology and university stakeholders in developing a reform agenda, tailored towards creating an environment that appropriately supports technological innovation in university teaching. It would also create awareness on the actual use of electronic instructional media in Nigerian universities and provide useful insights into reviewing curriculum at the apex level of education so as to facilitate technology use in educational process in Nigerian universities. The study would help decision makers in initiating adoption of emerging technologies in teaching. It will add to the body of existing literature on technology adoption, acceptance, use and success of information system. Moreover, this research will help advance the scope of studies on technology adoption and use and stimulate further research. Overall, the study will be useful to university stakeholders in planning, developing and implementing an e- learning system in Nigeria specifically and in Africa as a whole. This study therefore set out to investigate the extent of adoption and use of electronic instructional media on one hand and factors influencing adoption and use thereof among academics.

1.3 Research Objectives

The study sought to address two broad research objectives namely, to:

1. Establish the extent of adoption and use of electronic instructional media among academics in selected Nigerian universities
2. Determine the factors that influence adoption and use of electronic instructional media among academics in selected Nigerian universities.

1.4 Research Questions

The study addressed the following research questions:

1. What is the extent of adoption and use of electronic instructional media in selected Nigerian universities?
2. What factors influence adoption and use of electronic instructional media?

3. How do media literacy skills influence adoption and use of electronic instructional media?
4. What is the moderating effect of gender, age and teaching experience on adoption and use of electronic instructional media?
5. What challenges are faced in the adoption and use of electronic instructional media by academics in selected Nigerian universities?

1.4.1 Research Hypotheses

The following hypotheses were tested at 0.05 significant levels:

- HO₁: There is no significant relationship between the DOI constructs (compatibility, trialability, observability) and adoption and use of electronic instructional media
- HO₂: There is no significant relationship between the four main constructs of UTAUT and behavioural intention
- HO₃: There is no significant relationship between behavioural intention and adoption and use of electronic instructional media
- HO₄: There is no significant relationship between demographic variables (gender, age and teaching experience) and adoption and use of electronic instructional media

1.5 Significance of the Study

The study contributes to literature by providing empirical evidence on the factors influencing adoption and use of technology in educational setting in general, and universities specifically from a developing country perspective such as Nigeria. It also contributes to practice by providing a deep understanding of the best predictors of technology adoption and use among academics from a developing country context. The study provides data on a framework for deploying or fostering instructional technology in universities or in any educational setting. It provides necessary information on developing capacity building plans and strategies for implementing electronic instructional media adoption and use among academics in universities in Nigeria and elsewhere. It also provides data that may assist the universities in Nigeria in the formulation of relevant policies at the institutional and national levels for electronic instructional media integration into their curriculum. The study explicates the explanatory power of the UTAUT and DOI in predicting technology acceptance and use in

information systems especially in the context of a developing nation. It further advances the UTAUT and Roger's diffusion of innovation theory in measuring antecedent of adoption and use of technology.

1.6 Delimitation of the Study

The study investigated the adoption and use of electronic instructional media in selected universities in Nigeria. The study was conducted in two selected universities in the South West Nigeria region namely: University of Ibadan (UI), a public university and Covenant University (CU), a private university. These two institutions from the public and private sector respectively were purposively selected for the study because they both rank among the top ten in the academic global ranking of universities in Nigeria (Nwagwu and Aginrin, 2008). Furthermore UI is one of the pioneering users of Internet technology (which began as early as 1999 in Nigeria) while CU possesses variety of electronic instructional media tools for teaching and research. This study chose only two universities from one out of the six geographical zones. The result cannot therefore be generalised. Generalisability describes the extent to which research findings can be applied to settings other than areas where the study was originally conducted (Altman and Bland, 1998). Polit and Beck (2010) support that results can be generalised when there is a replication of such studies over time.

The study population comprised academics from three faculties: Science, Arts and Technology from the University of Ibadan on one hand and School of Natural and Applied Sciences (SNAS), School of Leadership Development (SLDV) and School of Engineering and Technology from Covenant University on the other hand. These two universities have the majority of disciplines which are common to both. These disciplines include among others: Mathematics, Physics, Chemistry, Computer Science, Civil Engineering, Chemical Engineering, Petroleum Engineering, Languages and Mass communications. While the population of academics studied included assistant lecturers, lecturers, senior lecturers, Associate Professors and Professors; it excluded academics that were on leave at the time the study was done. The use of DOI and UTAUT which evolved in a developed world context may introduce bias in the results because of different contexts. The faculties were not all inclusive as they were limited to basic disciplines (arts, science and engineering). In addition, the study was constrained by the busy schedule of the academics and as such, some of the respondents declined to participate in the study.

1.7 Preliminary Literature Review

Previous literature review providing the foundation for this research was drawn from both empirical and conceptual studies. Literature was sourced from books, journals, theses, conference proceedings, technical reports and databases such as ProQuest, Web of science, JSTOR, ERIC etc. Studies on the use of technology in secondary schools seemed more extant in literature than those on universities. In addition, most of the literature reviewed was undertaken largely from a developed and transitional country context in such places as Europe, US, New Mexico, Malaysia, Jordan, India, New Zealand, Saudi Arabia; Turkey, Malawi, Kenya, South Africa, Ghana and Tanzania (Oye, Iahad and Rahim, 2014; Martin, Parker and Allred, 2013; Okazaki and dos Santos, 2012; Goyal, Purohit and Bhagat, 2010; Al-Senaidi, Lin and Poirot, 2009; Birch, 2009; Redmann and Kotrlik 2009; Intaganok, Waterworth, Andsavachulamane, Grasaesom, and Homkome, 2008; Park, 2003) and less from the context of developing countries.

Thematically, the studies in extant literature covered extensively the following areas: technology adoption and use among teachers and pre-service teachers (Rahim and Rashidah, 2013; Mwalongo, 2012; Bakr, 2011; Cavas, Cavas, Karaoglan and Kisla, 2009; Wang and Wang, 2009; Al-Zaidiyeen, Mei and Fook, 2008; Teo, 2008; Lau and Sim, 2008; Ngai, Poon and Chan, 2007; Al-Saif, 2005; Gammill, 2005; Sugar et al., 2004; Curbelo-Ruiz, 2003). Previous studies also focused on adoption and use of specific software such as the MOODLE and Blackboard (Marzilli, Delello, Marmion, McWhorter, Roberts and Marzilli, 2014; Asiri, bt Mahmud, Bakar and bin Mohd Ayub, 2012; Ishtaiwa, 2011; Altun, Gulbahar and Madran, 2008); blended learning (Khechine, Lakhal, Bytha and Pascot, 2013; Haron, Abbas and Rahman, 2012; Altun, Gulbahar, and Madran, 2008; Brooks, 2008); e-learning (Agboola, 2005; Curbelo-Ruiz, 2003; Inman, Kerwin and Mayes, 1999); virtual learning (Martins and Kellermanns, 2004) and mobile learning (Ismail, Bokhare, Azizan and Azman, 2013; Martin, Parker, Allred, 2013; Alzaza, 2012; Anderson, Schwager and Kerns, 2006). Many different investigations are found in literature, but the discourses indicate that determinants of technology adoption and use are inexhaustible and complex.

Theoretically, extant studies have relied on TAM (Mac Callum, Jeffrey and Kinshuk, 2014a; Attis, 2014; Fathema and Sutton, 2013; Farahat, 2012; Phua, Wong and Abu, 2012). Similarly from the methodological perspective, extant studies on technology adoption and use

have extensively utilised quantitative approach (Al Gahtani, 2014, Attis, 2014; Alharbi and Drew, 2014; Ntemana and Olatokun, 2012; Oshinaike and Adekunmisi, 2012; Agbonlahor, 2008; Agbonlahor, 2006; Martins, Steil and Todesco, 2004; Less, 2003). For these reasons, the current study addressed these gaps through the research question as reflected in Table 1.1.

Table 1.1: Research Questions Addressing the Gap in Literature

Gap in Literature	Research Question(s) Addressing the Gap
Methodological gap: use of quantitative approach and online questionnaire for data collection	<ul style="list-style-type: none"> • What is the extent of adoption and use of electronic instructional media in Nigerian universities? • What factors influence adoption and use of electronic instructional media? • What challenges are faced in the adoption and use of electronic instructional media by academics in Nigerian universities?
Theoretical gap: The extensive use of TAM in literature to understand factors predicting technology adoption and use	<ul style="list-style-type: none"> • What factors influence adoption and use of electronic instructional media? • How do media literacy skills influence adoption and use of electronic instructional media and • What is the moderating effect of gender, age and teaching experience on adoption and use of electronic instructional media?
Practical gap: literature has primarily attempted to determine factors and challenges or obstacles to technology adoption and use, without identifying the best predictor (s) of technology adoption and use and how to solve these societal issues	<ul style="list-style-type: none"> • What factors influence adoption and use of electronic instructional media? • What challenges are faced in the adoption and use of electronic instructional media by academics in Nigerian universities?
Gap in coverage and scope: Many different investigations are found in literature on: adoption and use of electronic instructional media among teachers and pre-service teachers; use of specific software such as LMS and Blackboard; attitude of academics, availability and accessibility to technology	<ul style="list-style-type: none"> • What is the extent of adoption and use of electronic instructional media in Nigerian universities?

1.8 Theoretical Lens for the Study

The theoretical framework for this study is drawn from the Diffusion of Innovation theory and the Unified Theory of Technology Acceptance and Use. Diffusion of Innovation theory (DOI) is made up of five significant perceived characteristics of innovation: relative advantage, compatibility, complexity, and trialability and observability. The Unified Theory of Acceptance and Use of Technology (UTAUT) on the other hand explain users' intention to use an information system (IS) as well as usage behaviour (Alshehri, Drew, Alhussain and Al-Ghamdi, 2012). The UTAUT is based on eight user acceptance and motivation models, consisting of four constructs namely: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC). The effect of these four constructs is moderated by four other variables: age, gender, experience and voluntariness of use. UTAUT suggests that four core constructs are direct determinants of technology acceptance and use.

UTAUT is the main theory underpinning the research problem of this study complemented by DOI. Although UTAUT is relatively new, its suitability, validity and reliability in technology adoption studies in different contexts have been proven by scholars such as Anderson and Schwager (2004); Lin, Chan and Jin (2004) and Venkatesh et al (2003:447). Overall, a combination of UTAUT and DOI was adopted as theoretical framework for this study because of their comprehensiveness, validity and reliability in determining factors influencing adoption and use of technology. Using UTAUT and DOI, this study combined four constructs from UTAUT namely: performance expectancy, effort expectancy, social influence and facilitating conditions from UTAUT and three others from DOI namely: compatibility, trialability and observability to understand the factors determining adoption and use of electronic instructional media in teaching and learning. The relationship between research questions and the constructs from DOI and UTAUT is shown in Table 1.2.

Table 1.2: Mapping Research Questions to the Constructs of the UTAUT and DOI

No	Research Question	Theory	Construct of the Theory
1	What is the extent of adoption and use of electronic instructional media in selected Nigerian universities?	DOI	Behavioural intention trialability
2	What factors influence adoption and use of electronic instructional media?	DOI & UTAUT	Compatibility, Behavioural intention, Performance Expectancy, Effort Expectancy, Social Influence, Facilitating conditions, Trialability and Observability
3	How do media literacy skills influence adoption and use of electronic instructional media?	UTAUT	Usage behaviour
4	What is the moderating effect of gender, age and teaching experience on adoption and use of electronic instructional media?	UTAUT	Moderating factors of UTAUT (gender, age and teaching experience)
5	What challenges are faced in the adoption and use of electronic instructional media by academics?	UTAUT	Facilitating conditions

1.9 Methods

The study was premised on the post positivism paradigm. The post positivists theorise that “any perception of reality is drawn from empirical observation and existing theory with the basic concepts of quantification and generalization...” (Pickard, 2007:10). The ontological belief of post-positivists is critical realism; the ethical behaviour (axiology) is based on respecting privacy of respondents through the use of informed consent in research. This research paradigm is consistent with the mixed method approach, which is capable of combining qualitative and quantitative design for data collection. Mandal and McQueen (2012) and Tobbin (2010) have found the use of post positivist paradigm robust and parsimonious.

The mixed method approach was adopted for the study. Related studies that have used the mixed method approach include those of Oshinaike and Adekunmisi (2012); Becking (2011); Mushi (2010); Blankenship (1998); Jacobsen (1998). A descriptive survey research design was utilised for this present study. This allowed the effective collection and processing of numeric and textual data that were collected through structured and semi structured questionnaires administered to a sample of 267 academics from a population of 732 and 11

top university management staff respectively. The reliability and validity of instruments was achieved using cronbach alpha measures. Quantitative data were analysed using SPSS software while the qualitative data was analysed using NVivo software.

The ethical aspect or the axiological component of this research was achieved by adhering to the ethical protocol of the University of KwaZulu-Natal (UKZN). Protocol required the respondents for both the survey and interviews to sign the informed consent form. Moreover, permission was obtained from the relevant authorities of the selected universities for this study. A detailed discussion of the methodology is presented in Chapter four of this thesis.

1.10 Thesis Outline

The thesis is structured into seven chapters as follows:

Chapter One: Introduction

This chapter provides the background to the study, statement of the problem, research objectives, research questions, hypotheses, significance of the study, delimitation of the study, theoretical framework, preliminary literature and methods.

Chapter Two: Theoretical Framework

The chapter presents and elaborates the theoretical lenses namely UTAUT and DOI underpinning the study.

Chapter Three: Literature Review

The chapter provides a comprehensive review of both empirical and theoretical literature in books, book chapters, conference proceedings, journal articles and technical reports in print and electronic formats.

Chapter Four: Methodology

The chapter discusses research paradigm, research approaches, research design, population of study, sampling procedure, data collection methods, reliability and validity, data analysis methods and ethical considerations in research.

Chapter Five: Presentation of Findings

The chapter presents both quantitative and qualitative data obtained from survey questionnaires and interviews respectively. The findings from hypotheses tested are also presented.

Chapter Six: Interpretation and Discussion of Findings

The chapter discusses the research findings using related literature and theoretical framework that underpinned the study.

Chapter Seven: Conclusion and Recommendations

The chapter provides a summary of findings and implication to theory, practice, policy and the society. The chapter presents recommendations for further research based on interpretation of findings.

CHAPTER TWO

THEORETICAL FRAMEWORK

2.1 Introduction

A theoretical framework is the “conceptual underpinning of a research study which could be based on theory or on a specific conceptual model” (Pickard, 2007:298). It could also be defined as a general theoretical system with assumptions, concepts and specific social theories (Neuman, 2006:74). The purpose of theoretical framework in scientific research is that it makes a study scientifically meaningful (Pedhazur and Schmelkin, 1991), informs the organisation of a study and allows for generalisation of results to settings beyond those of the study (Polit and Beck, 2009). Theoretical framework provides direction to the research study, and situates the research in the discipline or subject so as to reveal the research goals (Henning, van Rensburg and Smit, 2004).

Manda (2002:95) indicates that theoretical frameworks are an integral component of the development of theories in any discipline. It helps the researcher identify the variables in a study and propose relationships to be tested or specific relationship with other variables (Polit and Beck, 2004; Pedhazur and Schmelkin, 1991). The significance of a theoretical framework lies in the knack to stimulate research and the extension of knowledge by providing both direction and impetus (Polit and Beck, 2004:119). Therefore, for a study to be scientifically meaningful, Pedhazur and Schmelkin (1991) suggest that the variables in a theory should be integrated into the research.

Theoretical rationales are developed when researchers test a prediction many times by combining independent, mediating and dependent variables (Cresswell, 2003:120) with a view to providing an explanation for certain predictions or expectations. A theory is “a set of interrelated constructs (variables), statements, definitions and propositions that present a systematic view of a phenomenon by specifying relations among variables, with the purpose of explaining natural phenomena” (Kerlinger, 1979:64). A model on the other hand is defined as “a framework for thinking about a problem and may evolve into a statement of the relationship among theoretical propositions” (Wilson, 1999:250). Krishnaswami and Ranganatham (2010:16) define a model as a simplified systematic conceptual structure of the

interrelated elements of a body of knowledge in some schematic form such as a narrative statement or mathematical equation.

The need for use of theory as a conceptual basis in IS research has been repeatedly voiced in the literature (e.g., Hjørland, 1998; Feehan, Gragg, Havener, and Kester, 1987; Boyce and Kraft, 1985). In quantitative studies, the researcher uses theory deductively right from the outset when developing the study plan. According to Creswell (2003:126; 2009:55), theoretical perspectives could be placed in the introduction, the literature review, after the hypotheses or research questions or in a separate chapter. But it is more advantageous to separate theoretical framework from other chapters to gain a deeper understanding of the theory base for the study.

The purpose of this study is to investigate the extent of adoption and use of electronic instructional media and factors influencing adoption and use of electronic instructional media among academics in selected Nigerian universities. This study reviewed theoretical frameworks that are relevant to the independent and dependent variables and the moderating factors. The study is underpinned by UTAUT as the dominant theory and DOI, which is used in a complementary role. Other theories that are relevant to the study and discussed in this chapter are Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM)/TAM2), Combined Theory of Planned Behaviour/Technology Acceptance Model (C-TPB-TAM) and the Motivational Model (MM).

2.1.1 Technology Adoption, Acceptance and Use Models/Theories

Human beings can demonstrate an array of behaviours when faced with a new information system or technology: “They may completely reject it and engage in sabotage or active resistance; they may only partially utilise its functionality, or they may wholeheartedly embrace the technology and the opportunities it offers” (Agarwal, 2000:86). Therefore, adoption comes after “direct experience with the technology and after an individual has decided to accept the technology” (Venkatesh, Morris, Sykes and Ackerman, 2004:446). In providing a suitable definition of technology acceptance, Louho, Kallioja and Oittinen (2006) defined technology acceptance as the way people perceive, adopt and use technology. Technology acceptance is a necessary requirement for the effective implementation of any Information Technology (IT) project (Pinto and Mantel, 1990). Technology acceptance is further defined as an “initial decision made by the individual to interact with the technology”

(Venkatesh, Morris, Sykes and Ackerman, 2004:446). To predict and elucidate user acceptance of technology, it is obligatory to comprehend why people accept or reject the information system (Davis, 1989). From the stream of research on information systems (IS), many theories have been proposed to explain the relationship between determinants of technology acceptance (Alharbi and Drew, 2014). Research in technology adoption and use is a constantly developing field. The reason for this can be ascribed to evolving new technologies on a continual basis (Al-Qeisi, 2009). Several technology adoption and use models and theories have been utilised to describe how users come to use or accept a specific technology (Oye, Iahad and Rahim, 2014; Al-Shafi and Weerakkody, 2009; Suhendra, Hemana and Sugiharto, 2009; Saade, Nebede and Tan, 2007; Venkatesh, Morris, Davis, and Davis, 2003). According to Rasimah, Ahmad and Zaman (2011) and Al-Qeisi (2009), these models have their origins in the disciplines of psychology, information systems and sociology.

Some of the theories as found in literature are: Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975) and Ajzen and Fishbein (1980); the Technology Acceptance Model (TAM) by Davis (1986); the Theory of Planned Behaviour (TPB) by Ajzen (1985, 1991); Diffusion of Innovation Theory (DOI) by Rogers (1962); Social Cognitive Theory (SCT) developed by Compeau and Higgins (1995); Model of PC Utilization (MPCU) by Thompson, Higgins and Howell (1991); the Motivational Model (MM) developed by Davis, Bagozzi, and Warshaw (1992); Task Technology Fit (TTF) by Goodhue and Thompson (1995); Combined TAM and TPB (C-TAM-TPB) by Taylor and Todd (1995); TAM2 by Venkatesh and Davis (2000) and the relatively broader model, the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al.(2003). “Research by these authors has generated various adoption metrics that can be used to estimate the probability of acceptance and successful implementation of ICT, IS, e-learning initiatives” (Evans, 2014:56) and even electronic instructional media use among academics in universities.

2.2 Unified Theory of Technology Acceptance and Use (UTAUT)

The Unified Theory of Acceptance and Use of Technology, popularly called UTAUT, was proposed and validated in order to provide a unified theoretical basis to facilitate research on information system (IS)/information technology (IT) adoption and diffusion (Alatawi, Dwivedi, Williams and Rana, 2012). In 2003, UTAUT was developed by Viswanath Venkatesh, Michael Morris, Gordon Davis, and Fred Davis (Venkatesh, Morris, Davis and

Davis, 2003). These scholars proposed and validated this model in order to provide a unified theoretical basis for research in information system (IS)/ information technology (IT) adoption and diffusion in view of the observed weaknesses of individual theories/models of technology adoption, acceptance and use.

The UTAUT theory was formulated and developed based on conceptual and empirical consolidation of eight prominent technology acceptance models that previous research has engaged to elucidate information system use behaviour. The theories/models that made up the UTAUT comprise: the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB), the Technology Acceptance Model (TAM), the Motivational Model (MM), Combined TAM and the TPB (C-TAM-TPB), the model of PC Utilization (MPCU); the Innovation Diffusion Theory (IDT), and the Social Cognitive Theory (SCT) (Ghobakhloo, Zulkifli and Aziz, 2010; Wu, Tao and Yang, 2007; Venkatesh et al., 2003).

The theory postulates (as shown in Figure 2.1) that four core constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions are direct determinants of behavioural intention and ultimately behaviour towards technology adoption and use (Venkatesh et al., 2003). The theory also posits that the effect of these four core constructs is moderated by gender, age, experience, and voluntariness of use (Venkatesh et al., 2003). The UTAUT model was developed to ensure simplicity as well as provide researchers with the opportunity to choose a model without having to sacrifice the contributions of other models.

Prior to the existence of the UTAUT, TAM was the most widely utilised theory to study IS/IT adoption within the IS discipline (Dwivedi, Williams and Lal, 2008). Nowadays, the UTAUT has emerged as a widely used model in information technology acceptance study because it has been tested in several cultures and organisational contexts (Akbar, 2013). Research on cross-cultural validation of UTAUT includes a study on employees' acceptance and use of computers in Saudi (Al-Gahtani, Hubona, and Wang, 2007), educational technology acceptance in Turkey (Göğüş, and Nistor, 2012), MP3 player and Internet banking in Korea (Im, Hong, and Kang, 2011) among others. Besides being tested in several cultures, UTAUT has also been tested in several organisational contexts such as healthcare (Venkatesh, Sykes, and Zhang, 2011; Ifinedo, 2012), business organisations (Anderson and

Schwager, 2004), government organisations (Olasina, 2014; Zhan, Wang, and Xia, 2011,) and educational institutions (Birch and Irvine, 2009). The UTAUT model has been used to examine predictors of technology acceptance and use from a general perspective unlike previous theories which are specifically designed for other domains (Kolawole, 2012).

Consolidating further the validity and reliability of the UTAUT, Dwivedi, Rana, Chen and Williams (2011) conducted a bibliometric analysis and systematic review of articles that have cited UTAUT model from UTAUT’s originating article. The review comprised 870 citations from the academic journals database provided by the Thomson Scientific Web of Sciences. The authors found that UTAUT has quickly gained acceptance and popularity amongst IS/IT researchers. They reported that UTAUT is very useful in evaluating the potential for success of new technology initiation and in identifying factors that are likely to influence adoption and use of technology.

The UTAUT has been fully utilised in sixteen studies to provide statistical data values for its independent constructs. Such studies include that of Chiu, Huang and Yen (2010); Curtis, Edwards, Fraser, Gudelsky, Holmquist and Thornton (2010); Duyck, Pynoo, Devolder, Voet, Adang and Ovaere (2010); Laumer, Eckhardt and Trunk (2010); Schaupp, Carter and McBride (2010); Abu-Shanab and Pearson (2009); Alapetite, Andersen and Hertzum (2009); Kijisanayotin, Pannarunothai, and Speedie (2009); Wang and Shih (2009); Chiu and Wang (2008); Gupta, Dasgupta and Gupta (2008); Al-Gahtani, Hubona and Wang (2007); Chang, Hwang Hung and Li (2007).

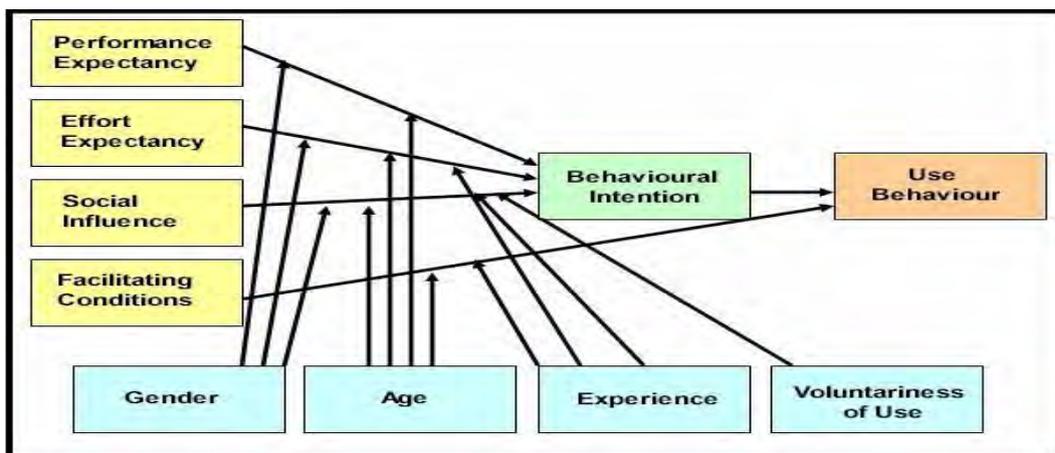


Figure 2.1: The Unified Theory of Acceptance and Use of Technology (UTAUT) Model (Source: Venkatesh et al., 2003:445)

Performance expectancy is defined “as the degree to which an individual believes that using the system will help him/her to attain gains in job performance” (Venkatesh et al., 2003:447). The antecedents of performance expectancy in other technology acceptance and use models and theories are perceived usefulness of TAM/TAM2, relative advantage in DOI, job-fit in MPCU, outcome expectancy in SCT and extrinsic motivation in MM. Based on empirical studies, “performance expectancy is the strongest determinant of technology use in both voluntary and mandatory settings” (Venkatesh et al, 2003:447). PE is dependent on gender and age in the sense that it is a stronger determinant for men, particularly younger men (Keller, 2007).

Effort expectancy is defined as “the degree of ease associated with the use of system” (Venkatesh et al. 2003:450). Succinctly put in the words of Park, Yang, and Lehto (2007), effort expectancy refers to the ease of use of the system and how comfortable people are while using a system. In TAM, it is analogous to perceived ease of use while in DOI and MPCU, it is the same with complexity. Effort expectancy is one of the four main constructs that are used in UTAUT in determining behavioural intention and actual use of a system. According to Keller (2007) and Venkatesh et al. (2003), effort expectancy influences behavioural intention to use information systems. Several studies (Deng, Liu and Qi, 2011; Al-Shafi and Weerakkody, 2010) showed that effort expectancy has a significant relationship with behavioural intention. Moreover, Zhou, Lu and Wang (2010) found that effort expectancy positively influences performance expectancy.

Social influence is defined as “the degree to which an individual perceives that important others believe that he/she should use the new system” (Venkatesh et al., 2003:451). This construct points to the consideration of a person’s perception of the opinion of others. Social influence is tantamount to subjective norms in TRA, TAM, TPB and C-TAM-TPB, social factor in MPCU or image in IDT. Social influence is only a significant determinant of usage behaviour if usage is mandatory (Venkatesh et al., 2003). The influence of the variable will be moderated by gender, age, voluntariness and experience.

Facilitating conditions are described “as the degree to which an individual believes that organisational and technical infrastructure exist to support use of the system” (Venkatesh et al., 2003:453). Similarly, constructs in previous technology adoption and use models are

perceived behavioural control in TPB/DTPB, facilitating conditions in TAM-TPB and compatibility in DOI. Facilitating conditions are found to have influence on usage, not on behavioural intention. The influence of facilitating conditions on usage has been reported to be moderated by age and experience of the individual (Venkatesh et al., 2003).

Behavioural intention (BI) refers to the intention of an individual to use technology. The underlying assumption of Venkatesh et al. (2003) on behavioural intention as regards technology use is consistent with other underlying theories in predicting intention to use technology in actual situation. UTAUT contended and proved behavioural intention to have significant influence on technology usage (Venkatesh and Zhang 2010; Venkatesh et al., 2003). The UTAUT theory suggests that three constructs are the main determinants of behavioural intention to use an information technology but performance expectancy is the strongest predictor of behavioural intention among all the variables of UTAUT (Zhou, Lu, and Wang, 2010).

UTAUT hypothesises that behavioural intention and facilitating conditions predict use behaviour. Legris, Ingham and Colletette (2003) reviewed twenty two (22) studies that were based on TAM and found that only eleven (11) out of twenty two (22) studies measured use behaviour. Most studies determined technology adoption and use through self-reporting, while only one (1) study measured technology adoption and use based on Venkatesh et al.'s (2003) tool. More recently, Taiwo and Downe (2013:48) conducted a meta-analysis of thirty seven (37) studies that were premised on UTAUT. These scholars discovered that the correlation between BI and use were only reported from thirteen (13) studies. The UTAUT theorises that behavioural intention towards the technology adoption and use is influenced by performance expectancy, effort expectancy, and social influence. This suggests that these three constructs of the UTAUT are the main determinants of behavioural intention to adopt and use technology, with performance expectancy as the strongest predictor of behavioural intention (Zhou, Lu, and Wang, 2010).

The UTAUT model also comprises four moderators: gender, age, experience and voluntariness of use influencing the four direct determinants of technology adoption and use (Ghobakhloo, Zulkifli and Aziz, 2010; Al-Shafi and Weerakkody, 2010; Suhendra, Hemana and Sugiharto, 2009; Wu, Tao and Yang, 2007; Venkatesh et al., 2003). According to

Sekaran and Bougie (2010), a moderating variable reduces or strengthens the relationship between independent and dependent variables. The constructs of the UTAUT reflect individual's reactions to technology adoption and actual use behaviour (Wild, Ullmann, Scott, Rebedea, and Hoisl, 2011).

The present study incorporates all the four constructs of UTAUT, namely performance expectancy, effort expectancy, social influence, facilitating conditions as well as three (gender, age, experience) out of four of the moderating factors of UTAUT. These constructs were used to examine the second and the fourth research questions, specifically: what factors influence adoption and use of electronic instructional media? and what is the moderating effect of gender, age and teaching experience on adoption and use of electronic instructional media? The data collection tool (see Appendix 1), section D sought information on the following items: performance expectancy; effort expectancy/perceived ease of use, social factors/image, facilitating conditions (organisational and technical support), compatibility; trialability and observability using a five point likert scale 1= Strongly Disagree 2= Disagree 3= Undecided 4 = Agree 5 = Strongly Agree.

Ghalandari (2012) investigates the effects of performance expectancy, effort expectancy, social influence and facilitating conditions on acceptance of e-banking services in Iran by considering the role of age and gender, using 310 questionnaires distributed to customers of Bank Melli. The results from the data analysis were based on simple linear regression. The findings of the study showed that all four variables i.e. performance expectancy, effort expectancy, social influence and facilitating conditions had a positive and significant effect on users' behaviour and intention to use e-banking services. The study found that age and gender moderated the relationships between these variables. Hsiao-Hui (2012), investigating students' acceptance and use of MOODLE, employed the UTAUT. The survey used the questionnaire to obtain data from 47 university students. Findings revealed that performance expectancy, effort expectancy, and social influence were the three predictors of the UTAUT in assessing the acceptance of MOODLE while behavioural intention was used as a mediator to determine its actual use by the students.

The present study sought the influence of media literacy skills by introducing it as an additional construct to the UTAUT. Mac Callum and Jeffrey (2013) observe that the

influence of media literacy skills on technology adoption and use has not been covered adequately in literature when they examined the influence of media literacy skills on students' adoption of mobile learning in New Zealand. A total of 446 students from three tertiary institutions participated in the study. The study found that students' intention to adopt mobile learning was influenced by media literacy skills.

Ghobakloo, Zulkifli and Aziz (2010:11) report that the UTAUT model is “robust across cultures through increasing understanding of cultural impacts on IT acceptance” and is formulated to explain behavioural intention and use behaviour towards technology. Additional studies that have served as confirmation to this assertion include a study on employees' acceptance and use of computers in Saudi (Al-Gahtani, Hubona, and Wang, 2007), educational technology acceptance in Turkey (Göğüş, and Nistor, 2012); use of 3G mobile communication in Taiwan (Wu, Tao and Yang, 2007), who found that performance expectancy and facilitating conditions had significant influence on behavioural intention of people to use 3G mobile communications in Taiwan and hybrid library services in Ugandan universities (Tibenderana and Ogao, 2009). Dulle and Minishi-Majanja (2011) used the UTAUT model to study the acceptance and usage of open access in Tanzanian universities. The results show that performance expectancy is a major factor affecting behavioural intention to use the open access.

Al-Shafi and Weerakkody (2010) premised their study on the UTAUT model to investigate the adoption and diffusion of e-government services, using a survey to explore the adoption and diffusion of e-government services in the state of Qatar. A regression analysis was conducted to examine the influence of e-government adoption factors and the empirical data revealed that performance expectancy, effort expectancy and social influence were found to influence citizens' behavioural intention towards e-government but facilitating conditions and behavioural intention influenced citizens' use of e-government services in the state of Qatar. Other scholars have extended the UTAUT model by adding other constructs such as e-quality, trust and satisfaction to develop an e-business quality model (Cody-Allen and Kishore, 2005). Heerink et al. (2006) expanded the construct of UTAUT by introducing cooperation, empathy, assertion, self-control, responsibility, trust and competence to the model to evaluate social abilities among the elderly people within an experimental setting

while El-Gayar and Moran (2006) introduced “self efficacy” and “anxiety” to study College Students’ acceptance of Tablet Personal Computers.

The UTAUT has proven to be stronger than the other competing models (Venkataesh and Zhang, 2010; Park, Yang and Lehto, 2007). The empirical testing and validation of the UTAUT proved that the UTAUT model outperformed the eight individual theories/models (Ghobakloo, Zulkifli and Aziz, 2010; Wu, Tao and Yang, 2007; Venkatesh et al., 2003). The strength of the UTAUT model is anchored on the authenticity that it is a more recent model than TAM, and can explain 70% of the variance in usage intention as compared with other technology acceptance and use models (Venkatesh et al., 2003). UTAUT is based on a compromise between eight other existing models, which are used within-subjects and longitudinal data from four organizations and cross validated by adding data from two additional organisations (Venkatesh et al., 2003). Additionally, UTAUT is based on the argument that many of the constructs of existing theories are similar in nature, thereby making it logical to map and integrate the constructs to create a unified theoretical basis (Venkatesh et al., 2003). The UTAUT model also considers the role of several individual characteristics such as gender, age, experience and voluntariness of use as moderating factors. Lastly, the UTAUT is considered parsimonious and comprehensive since it can explain more of the variance in usage intentions than any of the predecessor models (Al-Qeisi, 2009). The weakness of UTAUT is that most tests were carried out in voluntary usage contexts (Olasina, 2014).

This present study is premised on UTAUT as the dominant theoretical frame for the following reasons: firstly, UTAUT is considered the most recent theory with a comprehensive coverage of a range of IT Adoption/Acceptance models (Qureshi and York, 2008). Secondly, UTAUT has been used severally in investigating technology adoption and use in various organisations (Alatawi, et al., 2012; Uzoka, 2008; Marchewka, Liu and Kostiwa, 2007). Thirdly, it is a unified theory derived from the constructs of eight individual theories of adoption and diffusion (the TRA, TAM, TPB, C-TAM-TPB, MM, SCT, MPCU and the IDT) and could account for 70% of the variance in usage intention as compared with other technology acceptance and use models. Lastly, the UTAUT instrument is robust enough to withstand translation and could be used cross culturally in the context of a developing country (Oshlyansky, Cairns and Thimbleby, 2007). The model is therefore appropriate for this study. Based on the predictive power of the UTAUT and the DOI, the

study was prearranged using the mapping of the research questions to the constructs of these two theories (see section 1.8).

2.3 Diffusion of Innovation Theory

The Diffusion of innovation theory, though derived from sociology, has been used in various disciplines such as political science, public health, communications, history, economics, medicine, agriculture, and information technologies (Dooley, 1999; Stuart, 2000). Rogers' theory is a widely used theoretical framework in the area of technology diffusion and adoption. Historically, "the first research on attributes of innovation and their rate of adoption was conducted with farmers" (Rogers, 2003:223). Previous studies support the use of Rogers' diffusion of innovation theory for investigating the adoption of technology in educational settings (Medlin, 2001; Bussey, Dormody, and VanLeeuwen, 2000; Parisot, 1995). In line with this submission, the DOI theory is regarded as a valuable tool for educational technologists and instructional developers in increasing the use of electronic instructional media in educational settings.

The Diffusion of Innovation (DOI) theory was first developed by Rogers in 1962 (Rogers, 2003; Rogers, 1983). It is synonymous with the Innovation Diffusion Theory (IDT) developed by Moore and Benbasat (1991). DOI theory describes the pattern of adoption, explains the mechanism, and predicts if a new invention (information technology) will be successful. Adoption entails "full use of an innovation as the best course of action available" (Rogers, 1983:21). In explaining adoption further in IS research, Khasawneh in Suebsin and Gerdri (2009:2683) defines adoption as "the first use or acceptance of a new technology or product".

According to another perspective, adoption is a sequence of events an individual goes through over a period of time, which often times are based on cognitive, emotional and conceptual concerns (Straub, 2009). Beal and Bohlen (as cited in Weber and Kauffman, 2011) categorise adoption process into five stages: awareness, interest, evaluation, trial, adoption. Diffusion of Innovation theory (DOI) suggests that user's perception affect adoption (Plouffe, Hulland and Vandenbosch, 2001; Rogers, 1995; Moore and Benbasat, 1991). This is an indication that academics will adopt or reject an innovation based on the belief they form about the innovation (Agarwal, 2000).

The theory is applicable in information technology adoption, acceptance and use as the theoretical basis for IS research. DOI further suggests that individuals can be classified according to the rate of adoption of innovations as: innovators, early adopters, early majority, late majority and laggards. Fichman (as cited in Olasina, 2014:36) affirms that the DOI provides both qualitative and quantitative methods for assessing the likely rate of diffusion of technology and numerous factors which either enhance or inhibit technology adoption. Given that decisions are not authoritative or collective, academics will decide to use electronic instructional media based on the following five stages as suggested by Rogers (1995): knowledge, persuasion, decision, implementation and confirmation. The description of the stages incorporates:

- 1) Knowledge: person becomes aware of an innovation and has some idea of how it functions.
- 2) Persuasion: person forms a favorable or unfavorable attitude toward the innovation.
- 3) Decision: person engages in activities that lead to a choice to adopt or reject the innovation.
- 4) Implementation: person puts an innovation into use.
- 5) Confirmation: person evaluates the results of an innovation-decision already made.

Rogers' diffusion of innovation theory explains technology adoption from the individual level and not from the social group level. The relevance of the Diffusion of Innovation theory to this present study resides in the fact that adoption and use of electronic instructional media is the responsibility of the individual. This is directly related to research question one which states that: "*what is the extent of adoption and use of electronic instructional media in selected Nigerian universities*" (see section 1.4). Within the Rogers' innovation diffusion model, technology adoption and extensive use is associated with five factors known as attributes of innovation or perceived characteristics of innovation (Koçak, Kaya and Ero, 2013). From the viewpoint of Çakmak and Ocak (in Koçak, Kaya and Ero, 2013), an understanding of the attributes of innovation will lead to effective and efficient use of electronic instructional media. These attributes are relative advantage, compatibility, trialability, observability and complexity.

According to Rogers (1995:212), Relative advantage is “the degree to which an idea or innovation is perceived to be better than what it supersedes”. Compatibility depends on how the innovation fits into existing values, past experiences and needs of potential adopters. Complexity refers to how difficult it is to understand and use technology. Observability refers to how visible are the results (benefit of using information technology in teaching) to others; trialability signifies the “degree to which academics can test the technology before deciding whether to adopt it”. The greater the opportunity to try a new technology, the easier it is for academics to appraise it and eventually adopt it. Research has, however, consistently found that compatibility, complexity and relative advantage are important antecedents to the adoption of innovations (Bradford and Florin, 2003).

Regardless of the fact that numerous scholars concur that technology adoption and use is usually linked with relative advantage, complexity, trialability, compatibility and observability, some scholars are apprehensive about how many researchers have approached the study of these characteristics. Therefore it is important to understand the factors that promote or hinder adoption of electronic instructional media by academics in Nigerian universities based on DOI. These constructs (trialability, compatibility and observability) are reflected in the present study’s questionnaire (see Appendix 1, section D) and are directly related to research question 2 (see section 1.4), which asks: What factors influence adoption and use of electronic instructional media? Therefore, the data collection tool sought information from academics on the constructs (trialability, compatibility and observability) using a five point likert scale as follows: 1= Strongly Disagree 2= Disagree 3= Undecided 4 = Agree 5 = Strongly Agree.

Davis (1993); Adams, Nelson and Todd (1992); Moore and Benbasat (1991); and Davis et al. (1989) argue that relative advantage and complexities strongly influence technology adoption behaviour. Although relative advantage, compatibility, trialability, observability are generally positively correlated with rate of adoption, complexity was found to be negatively correlated with rate of adoption (Rogers, 1995). Diffusion of innovation theory has been used to find factors affecting IT adoption in general (Wong, 2003; Everdingen and Wierenga, 2002; Waarts, Everdingen and Hillegersberg, 2002; Knol and Stroeken, 2001). DOI has also been applied to studies of computer technology adoption in less developed countries (Al-Gahtani, 2003; Anandarajan, Igbaria and Anakwe, 2002; Utomo and Dodgson, 2001), adoption of new

computing architectures among IS managers (Bajaj, 2000), and adoption of web service standards (Chen, 2003). Others have studied the relationship between the level of internet adoption and competitive advantage (Teo and Pian, 2003), general IT diffusion patterns (Teng, Grover and Guttler, 2002), and the role of change agents in IT adoption (Elsammani, Hackney and Scown, 2003).

Most research on IT adoption uses Rogers' DOI theory to understand factors influencing either the whole adoption process within a particular context, or to explain the role of a particular factor in a specific adoption process (Sharma and Rai, 2003). Moore and Benbasat (1991) modified the characteristics of innovations presented by Rogers (1983) to study individual technology acceptance. In 1996, a further study was carried out by Moore and Benbasat, thereby providing empirical validity for the innovation characteristics of DOI (Agarwal and Prasad, 1997). Situating the Diffusion of Innovation theory in Information Systems (IS) context, Moore and Benbasat (1991), extended Roger's five factors impacting on technology adoption and use to eight. This includes voluntariness, relative advantage, compatibility, image, ease of use, result demonstrability, visibility, and trialability. This is an indication that DOI theory has been applied and adapted in various contextual settings.

Ntemana and Olatokun (2012), using DOI as theoretical framework, examined the influence of the five attributes of diffusion of innovation theory on academics' use of electronic instructional media. The population of study comprised 213 academics at the National University of Lesotho (NUL). A structured questionnaire was used as the tool for data collection. The result was analysed using stepwise multiple regression at 0.05 significance level. Their findings revealed that relative advantage, complexity and observability have a positive influence on attitude of academics towards use of electronic instructional media. The study found that observability had the highest influence. They recommend that university administration should organise relevant training and deploy user-friendly electronic instructional media into universities.

The study of Martins, Steil, and Todesco (2004) in Brazil on the use of the Internet as an instructional tool found trialability and observability as the two most significant predictors. An explanation of the disparities on factors that could influence technology adoption and use has been attributed to several interrelated elements. This includes but not limited to the

innovation, the individual and the environment, the communication channels, social system and time (Ntemana and Olatokun, 2012; Rogers, 2003; 1995 1983).

Although numerous studies from social sciences, agriculture and clinical sciences have applied the DOI, the major problem of the model is that there is no evidence to support the evolution of attitude to adoption and the use of technology (Olasina, 2014). Another criticism of the diffusion model is its linearity, suggesting that the innovation-decision processes will be followed one after the other.

2.4 Theory of Reasoned Action (TRA)

The Theory of Reasoned Action was proposed by Fishbein and Ajzen in 1975, but over the years the theory has been refined, developed, and tested (Chuttur, 2009). The Theory of Reasoned Action (TRA) is a well-established model from social psychology and has been used in explaining and “interpreting the determinants of consciously intended behaviour” (Ghobahloo, Zulkiflu and Aziz, 2010:10). Although TRA is the most primitive model used to elucidate technology acceptance (Al-Quesi, 2009), it is still relevant due to its capability in explaining the relationship between a person’s behaviour and attitude (Teo, Luan and Sing, 2008). Attitude is defined as beliefs or feelings (Dillon and Morris, 1996), TRA postulates that individuals are rational and will make systematic use of a given information system by considering their implications (Ajzen and Fishbein, 1980).

An individual’s behavioural intention is determined by attitude and subjective norm. Intention predicts actual behaviour (Pickett et al., 2012) vis-a-vis use of electronic instructional media among academics in universities. Attitude towards the behaviour refers to the degree to which performance of behaviour is positively or negatively valued. The Theory of Reasoned Action (TRA) looks at behavioural intention, rather than attitude, as the main predictor of information technology as shown in Figure 2.2.

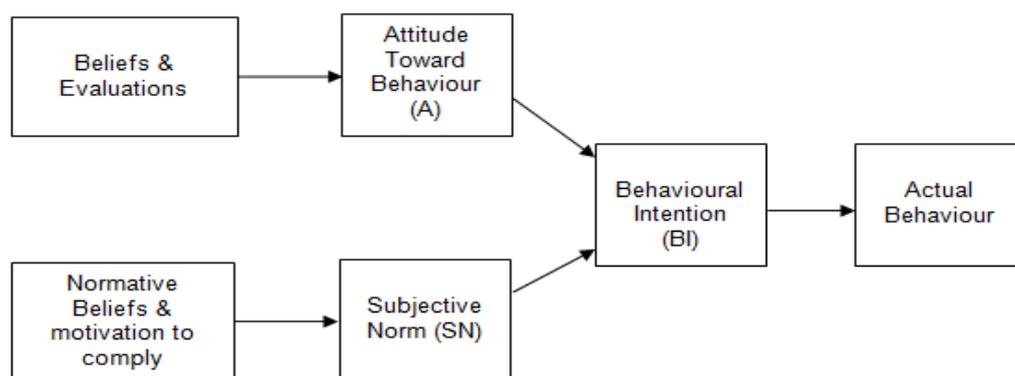


Figure 2.2: Theory of Reasoned Action (TRA) (Source: Fishbein and Ajzen, 1975 as cited in Davis et al., 1989:984).

According to Ajzen (1991:188), and Fishbein and Ajzen (1975), subjective norm “refers to the perceived social pressure to perform or not to perform the behaviour”. This is an indication that subjective norm is how academics perceive that people, who are socially or professionally associated with them think they should perform or not perform a given behaviour (Dillon and Morris, 1996), in this instance, use electronic instructional media. According to the TRA, subjective norms are determined by perceived expectations and a person’s motivation to comply with these expectations. The main emphasis of TRA is that attitude is influenced by belief which in turn determines behavioural intention to use electronic instructional media.

From the foregoing discussion, TRA is a universal model that can be used to explicate almost any human behaviour (Ajzen and Fishbein, 1980:4). Therefore, TRA is suitable and applicable for studying the determinants of electronic instructional media adoption and use behaviour (Davis, Bagozzi, and Warshaw, 1989:983). This variable is related to research question 2, of this study (see section 1.4 Chapter one). The reserach question two sought to determine the factors influencing adoption and use of electronic instructional media.

TRA is broader in scope in terms of its area of application. TRA is the bedrock for the formulation of most of the specific information technology acceptance theories/models such as TAM and UTAUT (Ani, 2013). However, the greatest limitation of the theory is the assumption that behaviour is under volitional control, thereby making this theory unsuitable

for the study. However, the construct behavioural intention is germane to this present study in an effort to answer research question two, which sought to understand the factors influencing adoption and use of electronic instructional media among academics. The construct, behavioural intention is found in UTAUT and as such, further justify the choice of the UTAUT as the main theoretical framework underpinning this study.

2.5 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), rooted in social psychology, was originally developed by Davis in his doctoral thesis at the MIT Sloan School of Management. TAM was later modified by Davis, Bagozzi and Warshaw in 1989. TAM was developed with a view to explicate and identify factors affecting the acceptance and use of information technology, information systems, and ICTs in organisations/institutions (Ramayah, 2006; Lee, Kozar and Larsen, 2003; Davis, 1993, 1989). The Technology Acceptance Model (TAM) is the most influential and commonly applied theory among other competitive models/theories for describing individual user acceptance of information systems (Lee et al., 2003). This is because TAM offers a powerful explanation for user acceptance and usage behaviour of information technology (Priyanka and Kumar, 2013). For reason such as this, TAM is an empirically validated model within information systems research (King and He, 2006).

Lee, Kozar and Larsen (2003) reports that the Technology Acceptance Model (TAM) is the most commonly employed theory for describing an individual's acceptance of information systems. This explains why a meaningful number of researches have their origin in the Technology Acceptance Model (TAM). This is an indication that TAM is the starting point for most research on end-user acceptance of technology because it focuses on the attitudinal explanation of intention to use a specific technology or service (Devaraj, Fan and Kohli, 2002). TAM is suitable in examining the relationship between users and technology, identifying the determinants involved in technology acceptance and information technology usage behaviours (Venkatesh et al., 2003; Davis et al, 1989).

The concept of TAM was based on Fishbein and Ajzen's Theory of Reasoned Action (Priyanka and Kumar, 2013; Ghobahloo, Zulkiflu and Aziz, 2010; Teo, Su-Luan and Sing, 2008). TRA posits that beliefs influence attitudes which lead to intention and ultimately, actual behaviour. TAM uses this correlation to understand IT acceptance behaviour. Davis (1986) then theorises that technology use can be explained by three factors: perceived ease of

use, perceived usefulness and attitude towards using the system. The model depicts that attitude of a user towards a system is influenced by perceived ease of use and perceived usefulness.

This original model has been modified by scholars such as Davis, Bagozzi and Warshaw (1989); Davis and Venketesh (1996) and Venketesh and Davis (2000). Davis, Bagozzi and Warshaw (1989) added a new variable known as behavioural intention to the original model with the proposition that behavioural intention would directly be influenced by perceived usefulness of the system. Davis, Bagozzi and Warshaw (1989) posit that if the system seems useful, the user will develop a stronger intention to use it. In 1996, Davis and Venketesh developed the final version of TAM as shown in Figure 2.3 by removing the attitude construct as they aver that attitude played a minor role in system usage behaviour.

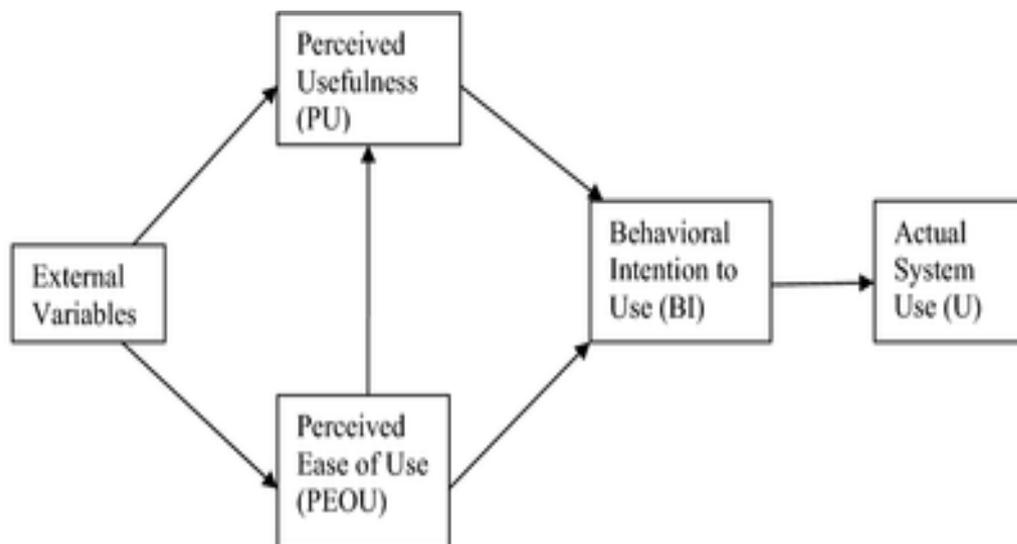


Figure 2.3: Technology Acceptance Model (Source: Davis and Venkatesh, 1996)

Perceived usefulness is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989:320). Perceived ease of use is “the degree to which a person believes that using a particular system would be free from effort” (Davis, 1989:320). Scholars (Oye, Iahad and Rahim, 2014) have observed that perceived ease of use and perceived usefulness predict users’ attitude and behavioural

intention to produce an actual behaviour. However, attitude of an individual is not enough to predict acceptance and use of technology in any contextual setting.

From the foregoing, academics in universities and elsewhere will adopt, accept or use an information system vis-a-vis electronic instructional media based on two beliefs (1) perceived usefulness (PU) (Davis et al., 1989; Davis, 1989; Davis,1986), and (2) perceived ease of use (PEOU). Oye, Iahad and Rahim (2014) opine that when an individual sees the usefulness and ease associated with using electronic instructional media, attitude towards such technology becomes more positive. Although perceived usefulness is, according to empirical studies, the stronger of the two determinants, perceived ease of use has been found to largely influence behavioural intention to use an information system through perceived usefulness.

TAM postulates that behavioural intention determines the actual use of information technology. However, behavioural intention is jointly determined by two variables: perceived usefulness and perceived ease of use (Saade, Nebede and Tan, 2007). Attitude (A) towards use and perceived usefulness (PU) jointly influence BI but BI is indirectly affected by perceived ease of use (PEOU). Attitude is directly affected by both PU and PEOU, while PU is directly influenced by PEOU (Shroff, Deneen and Ng, 2011). Davis and Venkatesh (1996) however, suggest that attitude would not play a significant role but rather, perceived ease of use and perceived usefulness. Moreover, in the Theory of Planned Behaviour, it is stated that behavioural intention has a direct influence on performance when the behaviour is voluntary (Ajzen, 1991). In situations where behaviour is not voluntary, as may be the occurrence in the academe and other educational settings, Hardgrave and Johnson (2003) submit that behavioural intention should still be considered.

TAM has been empirically proven to have high validity (Ramayah, Siron, Dahlan and Mohamad, 2002) and has been applied to a wide range of studies in educational or instructional technology. Examples include use of Learning Management System (Alharbi and Drew (2014); e-learning (Punnoose, 2012; Park, 2009); Graphic User Interface (GUI) (Agarwal and Prasad, 1999); accounting applications (Jackson, Chow and Leitch, 1997); World Wide Web (Riemenschneider, Harrison, Mykytyn Jr., 2003); computer resource centre (Taylor and Todd, 1995); online learning (Drennan, Kennedy and Pisarski, 2005); online course companion site of a textbook (Gao, 2005); WebCT (Ngai, Poon and Chan., 2007);

electronic mail, the Internet, personal computers and university resource centers (Scheepers, and Wetzels, 2007; King and He, 2006; Sun, and Zhan, 2006 Davis, Venkatesch and Davis, 2000; Venkatesh, 2000; Bagozzi, and Warshaw, 1989).

The advantage of TAM is that it is specifically designed to address the acceptance of IS technology (Oye, Iahad and Rahim, 2014) and also to predict the use of information technology in diverse cultural settings. TAM provides room for extensions and elaborations better than other competing models (Taylor and Todd, 2001). Despite that TAM is the most widely used and robust theoretical model in the study of acceptance and use of information and communication technology, it has several limitations and shortcomings (Sheikhshoaei and Oloumi, 2011; Lee et al., 2003).

The criticisms of TAM can be classified into three: the method used to test the reliability of TAM, the variables of TAM and relationships that exist between them, and theoretical foundation (Priyanka and Kumar, 2013; Churttur, 2009). According to Priyanka and Kumar (2013), many researchers consider TAM as a theory with questionable heuristic value. TAM is limited in explanatory and predictive power, trivial and lack practical value. Shajari and Ismail in Priyanka and Kumar (2013) posit that TAM does not fully explore the external variables that impact the PU and PEOU. Additionally, PU and PEOU are not fully mediated by attitude. Legris et al. (2003) point out that TAM studies exclude applications that are used in business environment, therefore, TAM does not give consideration to challenges such as time or money as factors that could prevent an individual from using an information system (Al-Shafi and Weerakkody, 2009:5; Taylor and Todd, 1995:149).

Furthermore, TAM lacks sufficient rigor and relevance that could make it a well established theory for the IS community. Therefore, researchers have mixed opinions regarding its theoretical assumptions, and practical effectiveness (Chuttur, 2009). TAM does not explain the acceptance of a technology in a way that real impact on the usability and acceptance of the technology could be felt (Venkatesh, 2000). According to Bagozzi (2007), a poor theoretical relationship exists among the constructs of TAM. He queries the link between behavioural intention and actual use and posits that behavioural intention may not be representative enough of actual use of information technology due to uncertainties. Generally speaking, TAM focuses on the individual 'user' of information technology, with the concept

of perceived usefulness and ignores the essentially social processes of IS development and implementation (Priyanka and Kumar, 2013).

In sum, TAM is limited in explaining technology adoption, as it fails to account for information system process design ramifications and disregards the societal forces that dictate technology adoption (Olasina, 2014). Therefore, these shortcomings of TAM make it unsuitable for this study because the university is a social system.

2.6 The Combined TAM and TPB (C-TAM-TPB)

This is a hybrid model between the Technology Acceptance Model (TAM) and Theory of Planned Behaviour (TPB). TAM and TPB have been used separately to compare their explanatory power (Yayla and Hu, 2007). The rationale for combining TAM and TPB is found in empirically gaining a richer understanding into factors affecting usage intention of technology (Chen and Chao, 2011). The C-TAM-TPB model combines the predictors of TPB with perceived usefulness from TAM to provide the hybrid model (Taylor and Todd, 1995:148; Ventakesh et al., 2003:429). The core constructs of the C-TAM-TPB model are shown in Figure 2.4.

- Attitude toward Using (A), which was adapted from TRA/TPB.
- Subjective Norm (SN), which was adapted from TRA/TPB.
- Perceived Behavioural Control (PBC), which was adapted from TRA/TPB.
- Perceived Usefulness (PU), which was adapted from TAM.

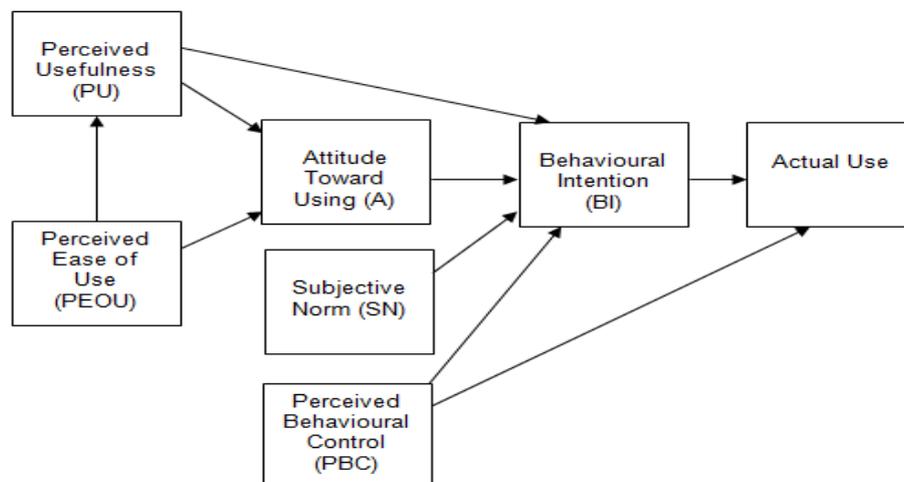


Figure 2.4: Combined TAM and TPB (C-TAM-TPB) (Source: Taylor and Todd, 1995:146)

The criticism of C-TAM –TPB as stated by Alatawi, Dwevedi, Williams and Rana (2012) is that using a hybrid model such as C-TAM-TPB cannot suffice in representing various organisational aspects. This is because C-TAM-TPB is disposed to investigate the technological context of an organisation rather than individual behaviour. Therefore the hybrid model is considered weak in addressing the research questions 2 and 4 which sought to understand factors influencing adoption and use of electronic instructional media and the influence of moderating variables (gender, age and teaching experience) on adoption and use of electronic instructional media.

2.7 Motivational Model (MM)

The Motivational Model (MM), as shown in Figure 2.5, was used by Davis, Bagozzi, and Warshaw (1992) and Ventakesh et al. (2003) within the information systems (IS) domain to explain adoption and use of information technology. This model proposes intrinsic motivation and extrinsic motivation as its core constructs to explain Behavioural Intention (BI). The model reflects reasons behind individual actions and reactions towards adoption and use of information technology based on intrinsic or extrinsic motivation. Davis, Bagozzi, and Warshaw (as cited in Ventakesh et al., 2003) state that Intrinsic Motivation (IM) refers to the perception that an individual will want to perform an activity “for no apparent reinforcement other than the process of performing the activity per se”. Often times, the individuals perform the activity, in this case use of electronic instructional media for exploratory or curious reasons (Moon and Kim, 2001).

Extrinsic Motivation (EM) refers to the perception that users will want to perform an activity “because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself. The outcomes include improved job performance, pay, or promotions (Davis, Bagozzi, and Warshaw, 1992). According to Cocosila, Archer and Yuan (2009), the Extrinsic Motivation (EM) and Perceived Usefulness (PU) of TAM are similar.

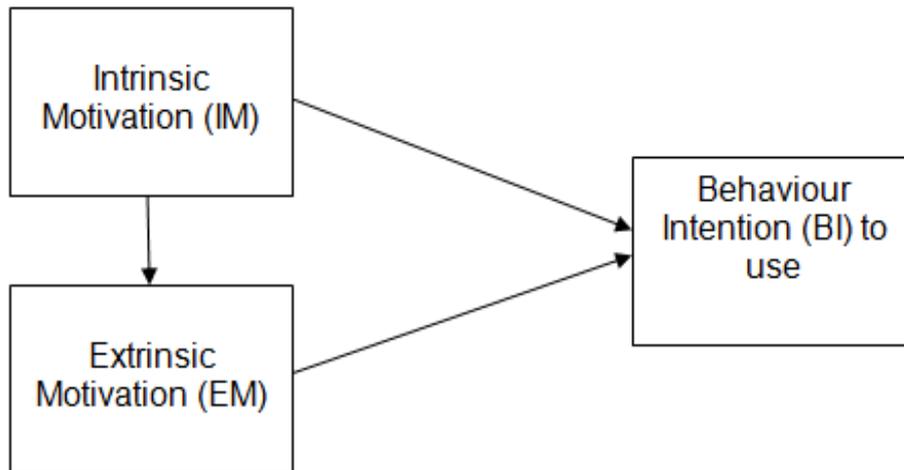


Figure 2.5: The Motivational Model (MM) (Source: Cocosila, Archer and Yuan, 2009:344)

2.8 Summary

The chapter highlighted and discussed a number of theories that could predict adoption and use of electronic instructional media in Nigerian universities. Some of the theories that are identified in literature include UTAUT by Venkatesh et al. (2003); TRA by Fishbein and Ajzen (1975, 1980); TAM by Davis (1986) etc with TAM appearing as the most prominent of all the theories.

The choice of the UTAUT as the dominant theory guiding this study is justified by its recency and ability to explain 70% of the variance in usage intention as compared with other technology acceptance and use models. The UTAUT model also considers the role of several individual characteristics such as gender, age, experience and voluntariness of use as moderating factors in technology adoption and use. A second theory on technology acceptance and use that is chosen to guide this study is the Diffusion of Innovation theory. Other technology acceptance and use models such as TRA, TAM, C-TAM-TPB and MM were discussed as the theoretical models underpinning the UTAUT. The constructs of all these theories, their relationships and relevant studies that have used them were also highlighted in this chapter. The chapter also presented the strength and weaknesses of the technology adoption and use theories. Overall, a meta-analysis of studies using UTAUT confirms Venkatesh et al.'s (2003) initial findings between the five (5) constructs of UTAUT.

The four main constructs of the UTAUT: performance expectancy, effort expectancy, social influence and facilitating conditions were expanded with an additional construct, media

literacy skills together with three constructs from DOI: trialability, compatibility and observability to understand the phenomenon raised in this present study.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

A literature review primarily sets the foundation for a study and guides the researcher through the research process (Ani, 2013). It is also relevant in the choice of theoretical framework for the study. Machi and McEvoy (2009) define a literature review as a written document that presents a comprehensive understanding of the current state of knowledge about a topic of study. The literature review, therefore, involves “summarisation, analysis, evaluation, and synthesis of the documents” (Onwuegbuzie, Collins, Leech, Dellinger and Jiao, 2010:173).

In the opinion of Creswell (2014; 2003), the purpose of the literature review is to provide a framework for establishing the importance of a study. It also serves as a benchmark for comparing the results of a study with other findings. A literature review is important because it helps the researcher gain familiarity with previous work in an area of scholarly interest (Gastel, 2012). Moreover, a literature review reveals important unanswered questions from previous research, appropriate methods and interpretation of findings. The overarching purpose of the literature review according to Gastel (2012) is that it helps to develop firmer understanding on how to analyse, evaluate and integrate information from existing research (Gastel, 2012).

The aim of this study was to investigate the extent of adoption and use of electronic instructional media and factors influencing adoption and use of electronic instructional media among academics in selected Nigerian universities. The first research question addressed the the extent of adoption and use of electronic instructional media in selected Nigerian universities. The second research question covered factors influencing adoption and use of electronic instructional media. The third research question sought the influence of media literacy skills on adoption and use of electronic instructional media. The fourth research question examined the moderating effect of gender, age and teaching experience on adoption and use of electronic instructional media. The fifth research question probe the challenges faced in the adoption and use of electronic instructional media by academics in selected Nigerian universities.

Kaniki, in Terre Blanche and Durrheim (2002) points out that there are different types of literature review: historical reviews; thematic reviews, theoretical reviews and empirical reviews. A synthesis of literature premised on chronological developments is known as historical review. Thematic reviews focus on different themes or perspectives. Theoretical reviews delve into theoretical developments in a specific discipline and also support such reviews with empirical evidence in line with the theories. Empirical reviews summarise empirical findings based on the methodologies. This present study reviewed both empirical and conceptual literature obtained from books, journals, theses, conference proceedings, databases, etc. The literature reviewed in this study was thematically developed, bearing in mind the research questions, key variables of the underlying theory and broader issues of the research problem.

The literature was reviewed to provide understanding on issues such as adoption and use of electronic instructional media in universities; factors influencing adoption and use of electronic instructional media; influence of media literacy skills on adoption and use of electronic instructional media; effects of gender, age and teaching experience on adoption and use of electronic instructional media and challenges of adoption and use of electronic instructional media. The review of literature also focused on key variables such as performance expectancy, effort expectancy and social influence, to mention a few, from the underlying theories and broader issues around the research problem. The chapter is organised by themes derived from the research questions and broader issues around the research problem. Within each theme, international context is reviewed followed by regional and local contexts.

3.2 Adoption and Use of Electronic Instructional Media in Universities

The first research question examined the extent of adoption and use of electronic instructional media in Nigerian universities. The variables linked to this research question are adoption and use; behavioural intention and trialability. Therefore, this section reviews existing literature on adoption and use of electronic instructional media among academics for the purpose of teaching in universities. Technology adoption and use in tertiary institutions has been the focus of recent information systems researches (Oye, Iahad and Ab.Rahim, 2012a). The reason for this is attributed to the prevalence of digital communication tools as preferred means of storing, accessing and disseminating information. Another reason is that emphasis

is now placed on strategic moves in the decision to adopt electronic instructional media in universities worldwide for the purpose of teaching and research. In line with this, a number of scholars, therefore, observe that technology adoption is critical for universities to facilitate teaching, learning, research and communication (Yan and Fiorito, 2007; Aguila-Obra and Padilla-Mele'ndez, 2006; Fink and Disterer, 2006; Peansupap and Walker, 2005).

A lot of research has studied technology adoption and use in various fields such as agriculture, communication, education, management, e-commerce; e- government etc. but predominantly in the context of western countries. In the educational settings, the thrust of discussion is that technology has breached walls “created by distance, time zones and the need to work directly with physical objects” (Bowen, 2000:11). Therefore, adoption and use of electronic instructional media in teaching should be the norm for academics, irrespective of the discipline. Moreover, global pressures from an information society and the competition provided by organisations further pressurises universities to embrace technology for the purpose of teaching and learning in the university environment.

Other reasons for adoption and use of electronic instructional media in universities as highlighted by UNESCO (2003) in the manual for pilot testing the use of indicators to assess impact of technology use in education are stated thus:

- ICTs are becoming an integral part of national education policies and plans as seen in universities' strategic plans and documents derived from that plan, such as information policy plan, information master plan and information project plans.
- The convergence of technologies has become a driving force for educational reform, making it possible for academics and students to connect better to information, ideas and each other via effective combinations of old and new technologies.
- With ICTs, academics can easily connect with colleagues and students from other countries and with sources of teaching materials.
- With information being more readily accessible, learners are no longer dependent on academics and librarians for information. Learners are helping redefine the roles of academics and librarians so learners can focus on analysing information and sharpening their critical thinking skills.
- Researchers are no longer faced with a lack of information, but with a glut of information. Data sharing, peer review and developing a network of contacts are no

longer constrained by distance as access to e-mail, web based files, data sharing, web logs and collaborative workspaces become ubiquitous.

- Universities are entering into partnerships with the private sector, in order to stay current as well as to get help in maintaining the operation and financial viability of ICT-based education programmes.
- There is an increasing prominence of for-profit institutions as makers of products and providers of services (Microsoft in partnership with Blackboard; Hewlett-Packard and Placeware) or end-to-end e-learning solutions (ecollege).
- The Internet and associated ICTs are making possible various forms of cross-border education, including trade in education.
- ICTs are altering the functions of libraries and changing the role of librarians. With a wealth of learning resources on the Internet, some of which are freely available, librarians are becoming information managers or 'cybrarians.'

Mutingi and Matope (2013), however, point that technology adoption is a complex process, influenced and driven by many factors. These factors are broadly categorised into three: promoters, inhibitors and imitators. Mutingi and Matope refer to the promoters as facilitators, the inhibitors as oppositions while the imitators are influenced by both the facilitators and inhibitors. Park (2003) submits that technology adoption and use is influenced by social, economic, organisational, and individual parameters. These four parameters have been reported to influence the types of electronic instructional media that are adopted and frequency of use after adoption. Kurnia, Mahbubur, Husada and Alhashmi (2013) argue that technology adoption and use is largely shaped by organisational, environmental and technological characteristics. Rogers (1995) submits that individuals, in this context, academics will base the decision to accept or reject technology on awareness, interest, evaluation and trial. The author described awareness as having information about a particular electronic instructional media and the benefit of using such in teaching. Interest is concerned with curiosity to go beyond the information stage by exploring it. This then leads to the evaluation stage where personal opinion about the suitability of a particular electronic instructional media for specific instructional purpose is formed.

Carman (in Mohamed Samir Hussein and Mourad, 2014) asserts that technology adoption process could follow a "top down" process or a "bottom down" approach. It becomes a top-

down approach if the innovation comes from the university administration for instance the vice-chancellor or the deputy vice-chancellor (academics and research). The impetus for technology adoption and use for teaching purposes may grow from an individual and move through the institution. Therefore, this present study sought to identify specifically factors influencing adoption and use of electronic instructional media in university environment. Baltaci-Goktalay and Ocak (2006) observe that academics are being pressured to incorporate electronic instructional media into teaching. Another reason lies in the actuality that university administrators expect academics to conform to best practices in teaching. Moreover, students are becoming more and more insistent that technology be incorporated in their courses.

Rogers (1995) explains that individuals in a social system, in this case, academics, do not adopt electronic instructional media at the same time. Some academics are somewhat early, while others do so late. The implication is that there are diverse adopter categories according to Rogers: Innovator (2.5%), Early Adopter (13.5%), Early Majority (34%), Late Majority (34%), and Laggards (16%). In line with this, Scholars recommend the need for awareness and training for early adopters of technology (Muinde, 2009; Odero-Musakali and Mutula, 2007; Rogers, 2003 and Mutula, 2001).

Another school of thought sees adoption of technology as a transformation, which is capable of creating exceptional opportunities for the purpose of teaching and learning in universities worldwide. Such transformation includes enhanced lecturer-student interaction, self-motivated environment for learning and access to varied resources. Czerniewicz, Ravjee and Mlitwa (2005) envisage that this transformation has changed the world from an industrial economy to an information/knowledge economy, where capital is knowledge and the competitive advantage is innovation and creativity. Academics who operate in the information economy will meet the learning needs of their students; enjoy widened access to course curriculum; proffer support to students with learning difficulties; expose their students to diverse learning; and prepare students for life beyond university through development of networking and discernment skills (Bates, 2000; Price and Kirkwood, 2011). For reasons such as these and many more, academics ought to adjust their instructional methods to match the growing demand for the use of electronic instructional media in the technological age (Mushi, 2010). The transformation should involve use of computers, internet and digital networks in teaching and learning (Agbatogun, 2013).

Another study emanating from the United States was carried out by Redmann and Kotrlik (2009). Using a survey research design, the authors conducted a study on integration of technology into teaching by family and consumer science teachers. The target population included all secondary family consumer science teachers in Louisiana. Data was collected with the aid of a questionnaire. Out of a sample size of 182 teachers, only 91 responded to the survey. The data gathered was analysed using descriptive statistics and multiple regression. Findings revealed that technology adoption by teachers was at a moderate level. They also found that age, technology anxiety and availability were independently related to technology adoption but technology anxiety was responsible for a large percentage of the variation in technology adoption.

Redmann and Kortlik also noted that teachers had computer with Internet connection at school and at home, school e-mail account, over half had a VCR, CD, or DVD Recorder; laser disc play or standalone DVD or CD players; interactive DVD or CD players, and access to enough computers in classrooms or laboratory for all students to work individually or as a group. Over one-third of the teachers had a digital video camera for instructional use. One-fourth of the teachers worked in schools where students had school e-mail accounts. Few of the respondents had personal digital assistant (PDA). The authors conclude that teachers must be proactive in their approach to technology adoption and use in teaching through incessant effort to learn from colleagues, conferences, workshops, college courses, and self-directed learning to stay on the cutting edge. The technology adoption scale developed by Redmann and Kortlik was adapted in this study to understand the extent of adoption and use of electronic instructional media in selected Nigerian universities (see section B of Appendix 1).

In a state university in Turkey, Zayim, Yildirim and Saka (2006) carried out a study on technology adoption among academics in medical faculty. The study sought to understand electronic instructional media usage patterns and the characteristics of medical faculty as well factors influencing technology adoption. Academics from the disciplines of basic and clinical science at a state university participated in the survey. The focus of the study was to explore the differences between academics who had adopted the new technology and those reluctant or resistant to IT adoption by examining the influence of academics' individual characteristics as predictors of adopter categories. Significant differences were found between early adopters and mainstream academics in terms of individual characteristics, adoption patterns, perceptions of barriers and technology preferences. The results indicated

that computer self efficacy and rank significantly contribute to the prediction of technology adoption and use among academics.

Another related study from Turkey was by Altun, Kalayci, and Avci (2011). The study examined technology adoption at the Faculty of Education. Data was collected from faculty dean, head of IT department, the department of Computer Education and Instructional Technology (CEIT), three academics from CEIT department who use LMS, one volunteer academic, one technical personnel, and seven research assistants using observation, document analysis, semi-structured and focus group interviews. An interview was conducted with one of the technical personnel responsible for solving computer related problems in the electronic classrooms while the focus group discussion was conducted with seven research assistants who had participated in the faculty training programs related to technology integration in teaching. At the end of the study, data was analysed using content analysis. The findings revealed that the institution had no written ICT policy. The authors submit that the steps in electronic instructional media adoption and use should include: enlightening stakeholders; creating awareness; needs analysis; in-service training; supporting infrastructure and motivation. The study concludes that universities should have precise and clear policies on electronic instructional media adoption and use in their strategic plan. The policy statement must clearly indicate how to realise technology adoption and use in teaching. The authors point that technology adoption and use in teaching can be achieved through training of personnel, provision of necessary materials, upgrading and maintenance of technological equipment and committed leaders drive adoption and use.

In Vietnam, Hue and Jalili (2013) used the descriptive-survey research to find out the use of electronic instructional media among academics. The purpose of the study was to determine attitude of academics towards integration of electronic instructional media into the curriculum. A total of 109 academics participated in the survey at a public university. The electronic instructional media types were productivity tools; multimedia presentation tools; internet; web applications; content specific software; drill and practice software; games and simulations; wireless handheld devices; course website imaging devices; computer projection device; email or other internet communication tools; authoring tools; learning management systems; web publishing tools and interactive whiteboard. E-mail topped the list on frequency

of use with a mean of 3.46 while that of interactive whiteboard had the smallest mean value of 1.22.

In Malawi, Harvey (2012) conducted a study on adoption and use of electronic instructional media by students and academics staff at Mzuzu University. The research used a survey method and the population was drawn from students, academics and library staff. Data was collected using interview and questionnaires. The study found that the state of technological tools at Mzuzu University was poor, however, adoption and use of electronic instructional media was high. The study reported that electronic instructional media were mainly used for academic-related task and internet access. Most of the respondents access the Internet using their personal laptop computers, which were either connected to smart phones or commercial internet cybercafés located off campus. Oyelaran-Oyeyinka and Lal (2005), however, decry the poor state of Internet access in sub-Saharan Africa, albeit there is fairly stable access in countries like Ghana and Nigeria.

In South Africa, Mushi (2010) explored the use of electronic instructional media among academics and postgraduate students at the University of KwaZulu-Natal. The conceptual framework for the study was derived from Vygotsky's constructivist theory of learning. The study used both qualitative and quantitative methods of data collection. The quantitative study was a survey involving the use of two questionnaires (one for academics and the other for students) as the main data collection tools. A total of 173 postgraduate students and 53 academics responded to the survey. The study revealed that a majority of academics and postgraduate students used electronic instructional media (both hardware and software) for teaching and learning. The study also identified various hardware and software existing at UKZN for teaching and learning and whether staff and students used electronic instructional media to support teaching and learning. The study revealed inadequate numbers of computers; slow network connections and poor support from the technical staff as some of the challenges to use of technology in teaching and learning. Further findings of the study showed the benefits derived from the use of electronic instructional media to include enhanced communication; simplified interaction between academics and students; accessibility to learning materials; improved student's skills; online delivery of lectures and ability of students to use computers more effectively to support learning.

In Nigeria, Dangani and Mohammed (2009) at the Ahmadu Bello University found computer systems, CD-Rom, flash drives, printers, scanners and Mobile phones were the most available electronic instructional media and probably the most frequently used by academics for teaching. They, however, noted a dearth of LMS, Optical disk and Intranet as tools for teaching. Oyelaran-Oyeyinka and Adeya (2004) investigated the use of computers by university staff. From the survey, 58.5% use computers for word processing, 32.2% use it for spreadsheet and data processing and 20.5% use it for programming. About 66.9% use it for e-mail/Internet while 9.4% use the computer for other purposes. A study from south west Nigeria by Tella (2011) disclose a low utilisation of electronic instructional media among academics in colleges of education.

In a study conducted by Singh (2012) on the use of e-resources among academics in teaching and learning in management colleges at NCR in India revealed that a majority of academics use electronic databases; specialized management databases, Web-based resources; e-journals; e-mail, newsgroups etc. The study also revealed that academics are pleased with the use of e- resources. Scholars such as Shuqair (2009); Barakat (2008); and Mohammad (2007) examined the use of the Internet among academics at Damascus University, Palestinian universities and Hashemite University respectively. The Internet was found to be widely used on a daily basis (3-7 hours) among nearly forty percent of academics who participated in the study.

In Uganda, Agaba, Kigongo-Bukenya and Nyumba (2004) examined the use of e-resources among academics at Makerere University. The aim of the study was to determine academics' awareness of electronic resources and the types of e-resources provided by the university library. The study used the mixed method approach using both questionnaire and interview. Findings revealed that most academics are aware of availability of e-resources, but do not utilise them. The authors submit that a number of factors affect e-resources utilisation and recommend augmentation of bandwidth and network within the university.

Aljaraideh and Shdoo (2014) reported a generally high extent of electronic instructional media use in teaching among academics at the Jerash University, Jordan. The study found computer ($M=3.79$; Std. $D=1.1$), followed by the Internet ($M=3.67$; Std. $D=0.59$) as the most frequently used electronic instructional media among academics. Among the e- resources, e-

mails and search engines are more prominent among academics. The authors, however, point that the use of e-learning, online exams and the Internet in teaching is at a moderate extent and therefore below the required level. The study recommended that academics should be trained on the use of instructional technology on a regular basis. Similarly, Komolafe (1994) submits that the provision of e-resources and its judicious use among academics is imperative for meaningful teaching.

At the Ontario University in Canada, in a study aimed at determining what electronic instructional media are being used and integrated within an undergraduate program, Laronde (2010) used questionnaire and personal interview as data collection tools. Findings revealed that academics used electronic instructional media in teaching but discrepancies exist in the extent of use due to ICT competence of academics among other factors. The use of Facebook among academics is also worth mentioning (Murphy, and Simonds, 2007). Arnett, Loewen and Romito (2013) examined use of social media by academics in dental schools. A total of four hundred forty-three full-time academics from five U.S dental schools were invited to partake in an online survey. Facebook was found to be the most commonly used social media. However, academics indicated that they used Facebook for personal purposes.

Agbatogun (2013) conducted a study on use of interactive digital technologies among academics. The purpose of the study was to predict academics' use of digital technologies in Nigerian Universities. The study population comprised 492 academics from Southwest universities. Data was collected through questionnaire and was analysed using descriptive statistics such as simple percentage mean and standard deviation, and inferential statistics such as Pearson Product Moment Correlation Coefficient, Analysis of variance and multiple regression at 0.05 significance level. The findings of the study showed that most academics were yet to adopt emerging digital technologies for teaching and learning due to some environmental factors. The author argues that the extent of adoption and use of electronic instructional media is influenced by academic qualification, status, motivating and discouraging factors.

The review of literature showed that there are more studies on adoption and use of technology in educational settings from Asia, Europe, America and Australia with a few emanating from Africa generally and Nigeria specifically. Studies that have investigated

adoption and use of electronic instructional media in teaching are limited in scope. These studies covered issues such as attitude of academics towards technology adoption and use, availability and accessibility issues within the academe and psychological attributes such as self efficacy. Overall, use of electronic instructional media in teaching and even for other purposes within the academe is growing but for African universities to experience a greater milestone, one school of thought believe that there must be greater commitment on the part of the universities and the government/leaders across the continent (Farell and Shafika, 2007). Differences thus exist among individuals, institutions and continents on the degree to which electronic instructional media have been incorporated into teaching and learning. Suffice to say that individual differences could also be responsible for the variations in the pattern of adoption and use of electronic instructional media across the studies examined in this review. Human factor is paramount to the use of electronic instructional media among university academics because they are foremost in this scene (Zare-ee, 2011). Another reason for the variation on the state of adoption and use of electronic instructional media among academics could also be drawn from the viewpoint of Groff (2013) who emphasised that technological developments across the globe varies considerably and as such, some countries are more open to technological innovation. Academics in various universities are also disposed to various degrees of social- cultural influences (Zare-ee, 2011; Meyers and Tan, 2002).

3.3 Factors Influencing Adoption and Use of Electronic Instructional Media

The second research question of this present study addressed the question: “*What factors influence adoption and use of electronic instructional media*”. To answer this question, the researcher sought the influence of two adoption theories (UTAUT and DOI) as highlighted in chapter two, to provide a more robust explanation of the factors influencing technology adoption and use in an educational environment. The UTAUT model posits that four antecedents: performance expectancy, effort expectancy, social influence and facilitating conditions have significant connection with technology adoption and use in teaching and learning (Venkatesh et al., 2003). The constructs of the UTAUT are moderated by gender, age, experience, and voluntariness of use.

3.3.1 Performance Expectancy

Performance expectancy is the degree to which an individual believes that using a system will help him/her attain so much in job performance. In the context of this current study,

performance expectancy is when academics believe that electronic instructional media will facilitate academic activities such as teaching and learning. Performance expectancy could be measured by perceived usefulness, relative advantage, job fit, outcome expectancy or extrinsic motivation. The focus of this section is to examine studies that have described the relationship between performance expectancy and adoption and use of technology.

Performance expectancy was found to have a significant positive influence on behavioural intention towards technology adoption and use by many previous studies (Abu-Al-Aish and Love, 2013; Ghalandari, 2012; Jairak, Praneetpolgrang, and Mekhabunchij, 2009; Wang, Wu, and Wang, 2009; Al-Awadhi and Morris, 2008; Gupta, Dasgupta and Gupta, 2008;; Venkatesh et al., 2003; Venkatesh and Davis, 2000). Other scholars (Cruz, Boughzala and Assar, 2014) found performance expectancy and effort expectancy as significant determinants of behavioural intention to use technology in teaching and learning.

Many scholars reported that perceived usefulness is the most significant predictor of behavioural intention to use technology (Wong, Osman, Goh and Rahmat, 2013; Lin, 2011; Pynoo, Devolder, Tondeur, van Braak, Duyck and Duyck 2011; Šumak, Hericko, Pusnik and Polancic, 2011; Teo, 2011; Smarkola 2007; Yuen and Ma, 2002). Some other studies note that perceived ease of use or ease of use (i.e effort expectancy) has strong influence on technology adoption and use (Tao and Yang, 2008). But to some other scholars, performance expectancy is the most significant in technology adoption and use (Pardamean and Susanto, 2012; Sedana and Wijaya, 2010; Chen, Wu and Yang, 2008; Dasgupda, Haddad, Weiss and danBermudez, 2007; Venkatesh et al., 2003). Based on the submission of these scholars, this present study sought the influence of performance expectancy on academics' behavioural intention and actual use of electronic instructional media. The present study developed questions seeking the influence of antecedents such as perceived use, relative advantage and complexity on adoption and use of electronic instructional media among academics.

In an online survey in a United Kingdom university, Buchanan, Saunder and Gunter (2013) observe factors associated with the use of learning technologies by academics. A total of 114 academics participated in the study. The study measured Internet self-efficacy, use of learning technologies and barriers to adoption of learning technologies. Perceived usefulness was found to be associated with adoption and use of electronic instructional media. This

finding is consistent with models of technology adoption and use such as Unified Theory of Acceptance and Use of Technology, and Decomposed Theory of Planned Behaviour which identify facilitating or inhibiting conditions than the classic technology acceptance model (TAM). The practical implication of the study for universities is that structural factors, such as provision of resources and technical support are vital for optimal uptake of e-learning.

In the United States, Terpend, Gattiker and Lowe (2014), examine the antecedents of students' adoption of electronic textbooks and learning outcomes. The aim of the study was to understand the factors contributing to acceptance of e-texts. Data was collected using survey questionnaire. The questionnaire was administered in the business school of a metropolitan university in the western United States with approximately 20,000 students. The findings revealed that perceived ease-of-use and the price of e-texts were two key determinants of e-text adoption. However, perceived usefulness, Internet self-efficacy and environmental concerns were not significant factors. Although, this study was conducted among students, the antecedents of adoption and use of electronic instructional media in educational settings are established.

In Malaysia, Hsbollah and Idris (2009) conducted a study on e-learning adoption among academics. The aim of the study was to investigate perception of academics on e-learning adoption. Data was collected from 244 academics in Universiti Utara Malaysia (UUM). Using logistic regression, factors influencing the adoption of e-learning among academics in UUM were determined. Empirical outcome revealed that relative advantage, trialability and academic specialisation positively influenced technology adoption.

Al-Senaidi, Lin and Poirot (2009) and Saade' Nebebe and Tan (2007) stress that attitude, interest and training predict academics' adoption of electronic instructional media. Corroborating this submission, Hagenon and Castle (2003) aver that only academics who are confident in handling electronic instructional media will likely adopt and use these tools in their teaching. Yohon and Zimmerman (2006) report that despite the fact that opportunities to learn how to use technology (software and hardware) are available through workshops and seminars, academics still choose more informal learning opportunities such as talking to other academics.

Al-Mobaideen (2009) develops a model on critical success factors influencing electronic instructional media adoption in universities. The author used qualitative approach involving use of face-to-face semi-structured interviews, documentation review and direct observation to understand electronic instructional media adoption in four Jordanian universities. Using deductive analysis techniques, the author found that policy, infrastructure and networks, funding and culture contribute significantly to adoption and use of electronic instructional media in Jordanian universities. Arias and Clark (2007) note that adoption and use of electronic instructional media is influenced by social, economic, cultural and technological factors.

Rogers (2003) identifies five technological characteristics or attributes that influence adoption. These characteristics are relative advantage, compatibility, complexity, trialability and observability. Surry and Gustafson (1994) posit that compatibility, complexity and relative advantage are important considerations when introducing an innovation in any instructional setting. In Mexico, using a public school as study site, Bussey, Dormody and VanLeeuwen, (2000) found that teachers' perception towards the attribute of technology is the strongest predictor of technology adoption. Dillon and Morris (1996) submit that any technology that is advantageous, compatible with existing practices and beliefs, offers low complexity, potential trialability and observability will have a more widespread and rapid rate of adoption. Rogers (2003) suggests that electronic instructional media which offer more relative advantage, compatibility, simplicity, trialability and observability will be adopted faster than other innovations. In a situation where academics are faced with pressure to integrate electronic instructional media into teaching, then technology adoption and use become mandatory (Casmir, 2001) or valuable in their instruction (Finley, 2003; McKenzie, 2001).

The adoption and use of technology could also be explained using TAM's proposition on perceived usefulness construct, which is analogous to performance expectancy. Perceived usefulness is the degree to which a person believes that a particular technology will be beneficial (Chang and Tung, 2008). According to Davis (1989), perceived usefulness is the most recurrent factor determining technology adoption and use. Mac Callum, Jeffrey and Kinshuk (2014a) observe that two features have been consistently found to predict academics' adoption of technology. These are perceived value of the new technology (that is

perceived usefulness) and perceived effort (perceived ease of use) needed to learn to use the new technology.

3.3.2 Effort Expectancy

Effort expectancy has been measured as perceived ease of use (PEOU) or ease of use in TAM/TAM 2 and complexity in DOI and Model of PC utilisation. Venkatesh et al. (2003) defines it as the ease associated with using a system. According to Davis et al. (1989:985), effort expectancy is “the degree to which the prospective user expects the target system to be free of effort”. Prior investigation has found a positive effect of effort expectancy on perceived usefulness and behavioural intention to use technology (Wong et al., 2013; Jairak, Praneetpolgrang, and Mekhabunchij, 2009; Wang, Wu and Wang, 2009; Chang and Tung, 2008; Venkatesh et al., 2003; Chin and Todd, 1995), perceived ease of use influenced behavioural intention to use technology indirectly through attitude and perceived usefulness. Therefore, if academics believe that electronic instructional media would increase teaching effectiveness and provide access to quality, and up to date information, both the intention to use and actual system use will be significantly amplified. This is because attitude is significantly influenced by both perceived usefulness and perceived ease of use. This is an indication that where technology is perceived to influence one’s productivity, and is believed to be relatively free of effort (Venkatesh et al., 2003; Davis et al., 1989), technology adoption and use becomes more prominent.

A study done in a Canadian university by Birch (2009) confirmed the influence of effort expectancy as the only significant predictor of behavioural intention towards use of electronic instructional media among pre-service teachers. Fathema and Sutton (2013) studied adoption behaviour of academics towards LMS (Blackboard) utilisation based on TAM. Data was gathered using convenience sampling technique. About 100 academics from five colleges at the university were selected to participate in an electronic survey. They reported that academics found the Blackboard an easy and helpful tool in teaching due to ease of use. Moreover, functionality was found to influence their perceived ease of use. Majority of the academics indicated that using Blackboard saves time by making teaching activities easier. Findings highlighted the useful features of Blackboard as follows: calculation of grades online, distribution of materials (e.g., a reading assignment, quizzes), and communication with all students simultaneously through chat room, discussion board). Overall, the study

found PEOU and PU to influence attitude of academics towards use. Therefore, Perceived ease of use is significantly related to behavioural intention (Smarkola, 2007; Venkatesh, et al., 2003). The study of Fathema and Sutton (2013) focused only on LMS, but this current study examined use of other electronic instructional media such as the Internet, social media, mobile phones, etc.

3.3.3 Social Influence

Social influence (SI) construct is one of the determinants of behavioural intention to technology use. Social influence is an important construct of UTAUT. It refers to subjective norm in TRA, TAM, TPB AND C-TAMTPB, social factors in MPCU and images in DOI. Social influence, therefore, is a normative belief in perceptions of others about whether one should or should not engage in a specific behaviour (Conner and Norman, 2005). Most studies have attempted to show the influence of social influence on technology adoption and use. According to Venkatesh and Davis (2000), social influence exerts different relationship on behavioural intention depending on the contextual setting, which could be either mandatory or voluntary. In a mandatory context, there is a direct effect between subjective norms and behavioural intention but in a voluntary context, the relationship between social influence and behavioural intention is not direct. Social influence is also associated with self-confidence. According to scholars (Shao and Siponen, 2011; Venkatesh et al., 2003; Venkatesh and Davis, 2000), the role of social influence in technology adoption and use is subject to demographic factors (such as gender, age and experience), key finding from a study done in China by Chu (2013) found that social influence has a positive relationship with intention to adopt and use the Internet.

In a North American university, Haythornthwaite and Wellman (1998) used a social network approach to examine how work and friendship ties in a university research group are associated with the kinds of electronic media used for information exchange. The use of e-mail, unscheduled face to face encounters, and scheduled face to face meetings predominate the exchange of information. The study found that the more frequent the contact among academics, students and the employees, the more complex the work ties. Kate, Haverkamp, Mahmood and Feldberg (2010) sought to extend TAM with social network characteristics as an additional variable. The study was based on the assumption that social network characteristics are antecedents of subjective norm and is capable of predicting technology adoption and use from social interactions perspective. The study indicates that when there is a

need to implement new technological innovations in teaching, academics who are friends within the department or faculty often exchange information, knowledge, ideas about the innovation.

Teo (2011) found that subjective norm (social influence) had no significant influence on teachers' intention to use technology. According to Lee et al. (2003), limited numbers of studies have examined the significance of social influence on technology adoption and use. This present study found the social influence construct suitable in predicting electronic instructional media adoption and use as done by previous studies such as Thompson, Higgins and Howell (1991); Moore and Benbasat (1991); Venkatesh et al. (2003).

3.3.4 Facilitating Conditions

According to Venkatesh et al. (2003), facilitating conditions reflect the degree to which an individual believes that organisational and technical infrastructure exist to support adoption and use of electronic instructional media within the system. Venkatesh, Davis and Morris (2007) posit that this construct refers to availability of technological and organisational resources. It is also the perceived availability of support in the work environment to encourage and facilitate technology adoption or enhance the intention to use technology (Taylor and Todd, 1995). Arias and Clark (2007) submit that implementation of electronic instructional media in developing countries is closely tied to the presence of facilitating conditions.

Facilitating conditions could also be associated with the characteristics of the organisation (Kurnia, Mahbubur, Husada and Alhashmi, 2013). Such institutional characteristics encompass top management support, financial resources and organisational readiness (Lin, 2006). Many studies observe that organisational support is important for success of any information system in both developed and developing countries (Chatterjee, Pacini and Sambamurthy, 2002). Rajesh (2003) warns that these factors could become inhibitors to technology adoption and use when not given utmost consideration.

Several studies confirmed a positive relationship between organisational support and actual use of a particular system or technology (Venkatesh and Bala, 2008; Liang, Saraf, Hu and Xue, 2007). In this present study, facilitating condition is operationalised as availability of instructional technologists; access to Internet; un-interruptible power supply; adequate computers. The independent variable facilitating condition is addressed in research question

two of this study which sought to examine factors that influence the adoption and use of electronic instructional media.

3.3.5 Behavioural Intention (BI)

Behavioural intention (BI) refers to the willingness of academics towards use or non-use of electronic instructional media (Davis, 1989). BI has been found to be the strongest antecedent of actual use of technology (Venkatesh, et. al., 2003; Davis et al., 1989)) especially in non-mandatory setting.

From the review of literature, information system use is determined by behavioural intention (Ajzen and Fishbein, 1980), which of course is influenced by attitude. According to Davis (1989), actual use of electronic instructional media will be influenced directly or indirectly by behavioural intention. Davis also theorised that external factors affect behavioural intention and actual technology use through mediated effects on perceived usefulness and perceived ease of use. Other scholars posit that attitude, subjective norms, and facilitating conditions all affect behavioural intention and in turn affect adoption and use of technology (Chai and Lim, 2011; Pynoo, Devolder, Tondeur, van Braak, Duyck and Duyck, 2011; Teo, 2010; Ajzen, 1991).

Alharbi and Drew (2014) studied the intention of academics on use of Learning Management System (LMS) in public universities in Saudi Arabia using the Technology Acceptance Model. The constructs of TAM were modified by introducing other variables such as LMS availability, LMS usage experience and job relevance. The study, being quantitative in nature, obtained data through the use of online survey. The survey instruments were adapted from the original measurement scales used in TAM and literature on use of LMS (Shroff, Deneen and Ng, 2011; Wu, Li and Fu, 2011; Sánchez and Hueros, 2010; Venkatesh and Davis, 2000). The questionnaire was translated into Arabic because most of the academics at Shaqra University were Arabic speakers. Using convenience sampling technique, a total of 105 academics from various colleges and departments participated voluntarily in the study. At the end of the survey, 69 responses were obtained with only 59 valid for data analysis. A correlation analysis was done and findings revealed a significant positive relationship between perceived usefulness and intention to use LMS. Also, it was found that significant positive relationship exist between perceived ease of use and intention.

In South Africa, Evans (2014) empirically measured the influence of behavioural intention on e-learning use behaviour of academics and students at the University of Zululand. The study found that for academics, the direct effect of behavioural intention to use e-learning resources was the most significant on use of e-learning. The researcher concluded that provision of an enabling environment for both academics and students to engage in e-learning is imperative. This is because an enabling environment, as explained by the author, will enhance behavioural intention towards use of e-learning among academics.

Oye, Iahad and Ab.Rahim (2012a) studied the behavioural intention of academics towards adoption and use electronic instructional media in Adamawa State University (ADSU), a public university in Nigeria. They conducted a study that used both quantitative and qualitative data from sequential mixed methods. For the quantitative survey, 100 questionnaires were administered and collected while video interview was employed to obtain qualitative data from four senior academics for the study. Using regression analysis, the study examined the influence of the four constructs of UTAUT (PE, EE, SI, and FC) and three TAM constructs: anxiety, self efficacy, and attitudes towards use of technology on the behavioural intention of academics, towards the adoption and use of electronic instructional media for teaching and learning. The statistical results from the study showed that the most influential construct outside UTAUT is attitude towards use of technology, which is significant with p value = 0.001. The study underscores the need for training and re-training of academics on the use of electronic instructional media for teaching purposes. The study concludes that academics need soft loan, as a form of motivation, to procure their own ICT facilities.

In another study, Oye, Iahad and Ab.Rahim (2012e), at the University of Port Harcourt in Nigeria, examined the behavioural intention of academics towards adoption and use of electronic instructional media. The study was premised on two adoption theories namely UTAUT and TAM. The influence of the four constructs of UTAUT (performance expectancy, effort expectancy, social influence, and facilitating conditions) and other variables like anxiety, self efficacy and attitudes towards use of technology on the behavioural intention of academics was tested. One hundred questionnaires were administered and collected. Five null hypotheses were tested and data was analysed using SPSS. The constructs of the UTAUT model were verified using regression analysis to understand the behavioural intention of the university academic staff towards acceptance and

use of ICT in their workplace. The findings of the study revealed that the behavioural intention of academics towards adoption and use of electronic instructional media is subject to ICT anxiety and attitude. The study confirms that the most influential UTAUT construct influencing behavioural intention of the academics towards adoption and use of electronic instructional media is Effort Expectancy (EE).

3.3.6 Observability, Compatibility and Trialability

Observability, compatibility and trialability were drawn out of the five perceived innovative characteristics of Rogers to understand factors predicting adoption and use of electronic instructional media among academics. Observability is one of Roger's perceived innovation characteristics, depicting "the degree to which the results of an innovation are visible to others" (Rogers, 2003:258). Observability also refers to the effortlessness with which innovation is communicated to potential adopters (Tornatzky and Klein, 1982). It can also be described as the extent to which the results of an innovation are visible to, and communicable to others (Alajmi, 2011). According to Surry and Gustafson (1994), trialability is a process in which individuals examine and analyse the technology, with a view to know how to operate and use it. Compatibility is defined as the perception that a particular innovation is similar and congruent with existing understanding of similar or past ideas, products, or practices (Rogers, 1995).

Moore and Benbasat (1991:203) theorise that "the more a potential adopter can see an innovation, the more likely he will adopt it". According to Tornatzky and Klein (1982), observability is strongly related with relative advantage and compatibility. An observable innovation changes the perception of the individual since the degree of compatibility with the task is seen. Therefore, it is difficult to separate these two constructs' relative advantage and observability because both reflect immediate and prospective benefits connected with the use of technology.

Jebelie and Reeve (2003), in an Australian secondary school explored adoption of Web technology among teachers. The authors found relative advantage, compatibility, visibility, ease of use, results demonstrability and trialability as important constructs in technology adoption. A study done in Brazil by Martins, Steil and Todesco (2004) confirmed observability and trialability as the two most significant elements of technology adoption and

use. Rogers (2003) posits that instructional technologies that offer relative advantage; compatibility with existing consistency in practices and beliefs; low complexity; trialability, and observability will spread quickly than those who do not exhibit these characteristics. Lorenzo (2010) in a study on adoption of instructional technology in a military medical school observed that adoption of instructional technology by academics was determined by relative advantage, compatibility, complexity, trialability and observability.

Keesee and Shepard (2011) used the perceived characteristics of Roger's Diffusion theory to examine adoption and use of course management system among academics in three public and two private Historically Black Colleges and Universities (HBCUs) in Georgia and North Carolina. The instrument for data collection was developed from a combination of three existing validated scales: McQuiggan's (2006) Perceived Attributes Instrument; Davis's (1989) Technology Acceptance Model (TAM); and Moore and Benbasat's (1991) Adoption of Information Technology Innovation survey and the literature reviewed. The online questionnaire was mailed to 1038 academics out of which 137 full-time academics comprising 38.7% male and 61.3% female responded to the survey. Data was analysed using SPSS. The study revealed that relative advantage and observability were predictors for early adopters of instructional technology and laggards. Observability and trialability was a significant predictor for late majority adopters. The findings from this study indicate that universities can facilitate adoption and use of electronic instructional media through interactions among academics in small or large groups.

A survey by Nazari (2014) examined the predictors of adoption of online database using Rogers's diffusion of Innovation theory at the Islamic Azad University (IAU) in Iran. A sample size of 351 academics was selected through stratified randomised-sampling method. Empirical findings from the research elucidate the importance of compatibility, complexity, trialability and observability. Another related study was done in Turkey by Askar, Usluel and Mumcu (2006), who examined the extent to which perceived innovation characteristics of Rogers influenced adoption and use of electronic instructional media. The aim of the study was to determine the perception of the teachers towards electronic instructional media. Using questionnaire as instrument for data collection, data was obtained from 416 secondary school teachers. The findings revealed complexity or ease of use as the most common perceived innovation characteristic. Further findings showed that observability influenced teaching

delivery in some specific tasks while relative advantage and compatibility predicted teaching preparation tasks.

Alnujaidi (2008) studied adoption and use of Web-Based Instruction (WBI) by English language academics in Saudi Arabia. The study examined the relationship between the five attributes of the Diffusion of Innovations Model (relative advantage, compatibility, complexity, trialability, and observability) and adoption of WBI. The influence of demographic variables (gender, age, academic rank, nationality, major, country of graduation, and teaching experience) on adoption was also examined. A total of 320 academics in 20 higher education institutions in Saudi Arabia were surveyed using questionnaire as instrument of data collection. Data was analysed using descriptive statistics such as frequency distribution, percentage, means and standard deviation. Inferential statistics (multiple linear regression) were employed to test the research hypotheses. The study indicated that adoption and use of WBI among English language academics was in its early stage of Rogers' five attributes of the Diffusion of Innovations Model (relative advantage, compatibility, complexity, trialability, and observability). Three demographic variables (academic rank, major, and country of graduation) were found to have a statistically significant relationship with adoption and integration of WBI. Also, each of the predictor variables (the five attributes of the Diffusion of Innovations theory and the demographic variables contributed significantly to the prediction of technology adoption.

In Lesotho, Ntemana and Olatokun (2012) explored the influence of the five attributes of diffusion of innovation theory: relative advantage, complexity, compatibility, trialability, and observability on academics' use of information and communication technologies. The study used structured questionnaire to collect data from 213 academics in seven faculties and one institute at the National University of Lesotho (NUL). The attributes relative advantage, complexity, and observability were found to have a positive influence on attitude of academics toward using electronic instructional media, with observability having the highest influence. The authors conclude that widespread use of electronic instructional media can be enhanced through relevant training and deployment of user-friendly electronic instructional media in the academe. Gibbone, Rukavina and Silverman (2010) report that training, access to technology, time and personal comfort of academics all syndicate to determine adoption and use of electronic instructional media in teaching. However, Keller (2006) argues that job relevance is also a predictor of technology adoption and use in any contextual setting.

The review of literature exposed extant factors influencing adoption and use of electronic instructional media in educational settings. However, there is no consensus among information systems researchers on the best predictors of technology adoption and use, rather the discourse point to the fact that technology adoption and use is a complex process with many intricacies. In practice, previous studies deviate from establishing the best predictors of technology adoption and use in educational settings. The departure of this study from other previous studies lies in the choice of the mixed methods approach to seek answers to factors influencing adoption and use of electronic instructional media. Extant studies based on the use of the quantitative approach in examining technology adoption and use only elucidate the relationship between variables used in the study (Alharbi and Drew, 2014), thereby, focusing on theory or hypothesis testing while overlooking occurring phenomenon. This in actual fact demonstrates the weakness of using only the quantitative approach in research.

According to Bryman (2008), the mixed method approach is capable of:

- giving the researcher the opportunity to connect between the research and every day life;
- overcoming the barrier of artificial measurement in research through reliance on the use of questionnaire, thereby allowing social science researchers to measure parameters from real life situation;
- allowing the respondents to interpret the world around them by giving them room for self reflection and;
- preventing the researcher from seeing the research problem, and providing answers from a static view. This often times arises from the use of statistical approach in quantitative research.

Creswell (2003) points out that the mixed method approach allows the researcher to explore the research problem using a few cases of individuals.

TAM was the most widely used among all the technology acceptance models in many previous studies. Most of the studies also ignored the factors that influence the adoption and use of electronic instructional media particularly in university education. For instance, most previous studies examined attitude of academics towards adoption and use of technology (Mbengo, 2014; Hue and Ab Jalil, 2013; Elsaadani, 2012; Onasanya, Shehu, Oduwaiye and Shehu, 2010). Moreover, in view of the seeming benefits of the innovative characteristics of

the DOI theory, this present study incorporate these three constructs (observability, compatibility and trialability) with the construct of the UTAUT to elucidate factors influencing adoption and use of electronic instructional media in the context of a developing country.

The review of literature suggests that many factors promote technology adoption and use, but there are disparities in the findings of previous scholars. The potential reasons behind the diversity in the results of previous studies could be attributed to the contextual setting where such studies were carried out. However, many scholars support the use of technology adoption theories in elucidating the catalyst for technology adoption and use, even in educational environments.

3.4 Media Literacy Skills and Adoption and Use of Electronic Instructional Media

The third research question of the present study examined the influence of media literacy skills on adoption and use of electronic instructional media among academics in selected Nigerian universities. From the summary of literature reviewed, media literacy, unlike information literacy is understood more narrowly possibly because it is applicable in two domains: educational institutions and the media industry. The definition for media literacy varies but the conceptual discourse is directed towards three central themes: media literacy is a new literacy that emerged in response to technological and cultural changes (Knobel and Lankshear, 2007); it is an element of information literacy (Eisenberg, Lowe and Spitzer, 2004) and need for multi-literacies (Livingstone, 2008).

Lee and So (2014) in their study of the relationship between information literacy and media literacy, using the Web of Science database from 1956 to 2012, argue that media literacy is not a subset of information literacy. Moreover, information literacy is also not a subcategory of media literacy. The overarching presumption in literature is that individuals, digital natives or digital immigrants will have to develop the requisite skills necessary to cope with digital technologies (Prensky, 2001). A commonly held definition as found in literature for media literacy is the ability to access, analyse, evaluate and communicate messages in a variety of forms (Martens, 2010; Aufderheide, 1993). This definition, however, was found not suitable for this present study. A more acceptable definition for the concept as provided by Markauskaite (2007) states that media literacy is the measure of an individual's ability to use

digital technology, communication tools, and/or networks to access, manage and integrate digital resources. The term digital literacy will be used interchangeably with media literacy in this present study because both concepts refer to capabilities desirable for living, learning and working in a digital society (Beetham, 2010).

Zhang, Tousignant and Xu (2012) and Pianfetti (2001) point out that it is becoming more important for academics to be digitally literate. They argue that academics need to inculcate in their students skills and knowledge needed in the 21st century. Maharana and Mishra (2007) examined digital literacy of academics at Sambalpur University in India. The study used structured questionnaire to obtain data on computer literacy, digital information competency, training, orientation and the role of the library in developing media literacy skills. A total of 105 academics participated in the study. Findings revealed that 58 (82.86%) academics were computer literate, 60% had no formal computer training while majority of the university academics had Internet knowledge. The authors recommended that the university management should train academics on how to search/browse the internet and evaluate the validity of such information. The study further suggests that the library should develop and implement digital information literacy programme to educate the faculty members (academics) while the university management should engage in e-information infrastructure development. Overall, the study was able to identify the media literacy skills of academics in this institution. Although, the research was limited in terms of its focus on academics who teach postgraduate students, the result is applicable to all academics whether they teach postgraduate students or not. The study was also able to bring to the fore the role of the library in the acquisition of 21st century literacy skills. These include but are not limited to knowledge of Internet applications, use of basic software and multimedia. Furthermore, Romani (2009) reported that these skills should include how to retrieve information in digital environments and the ability to develop a search strategy to locate information from one or more sources; generating new information and knowledge and communication (conveying information and knowledge to various individuals and/or groups).

The present study extends the UTAUT by including media literacy skills as an additional construct to predict technology adoption and use. This is because media literacy skills have been consistently reported in the literature to have significant influence on technology adoption and use (Hashim, 2015; Mac Callum, Jefferey and Kinshuk, 2014a; Hasan and

Ahmed, 2010; Wainwright et al., 2005; Hasan, 2003; Shiels et al., 2003; Ndubisi and Jantan, 2003; Potosky, 2002). Hashim (2015) in a study on information communication technology adoption among SME owners in Malaysia examined the extent of information communication technology (ICT) skills, use, and adoption among owners of small and medium enterprises (SMEs) in Malaysia. The study used a survey instrument developed from the constructs of DOI. A total of 383 SME owners participated in the study. The findings showed that digital literacy skill is positively correlated to technology use ($r=0.790$, $p=0.000$). In Saudi Arabia, Robertson and Al-Zahrani (2012) found digital literacy skills to be positively related to use of electronic instructional media among teachers. Although, the relationship between digital literacy skills and technology adoption and use has been examined by very few scholars (Hashim 2015), it is argued that digital literacy influences users' perception on the usefulness of technology, thereby exerting direct influence on actual system use (Ndubisi and Jantan, 2003).

Digital literacy is an antecedent of technology use (Tai and Ting, 2011), which can act either as an enabler or hindrance to technology adoption and use depending on the contextual setting. The inclusion of media literacy skills in this present study is also premised on the deterministic ability of the construct to influence attitude of academics. Al-Oteawi (as cited in Bordbar, 2010) and Buabeng-Andoh (2012) observes that majority of teachers who have negative attitude towards use of instructional technology in teaching are those with poor digital literacy skills. Rastogi and Malhotra (2013) identify the relationship between digital literacy skills, attitude towards technology and the actual integration of technology among teachers in South Delhi, India. The study found a high correlation ($r =0.86$) between digital literacy skills and technology use. The findings indicate that teachers who were digital literate found instructional technology to be more useful because such teachers displayed greater confidence and low anxiety and aversion towards technology use.

The relevance of digital literacy in the academe is also evident in the OECD's (2001) educational policy analysis document which states unequivocally that the knowledge economy is based on the production and use of information and knowledge, and the ability to produce and use information effectively is thus a vital source of skills for many individuals" (OECD, 2001:100). This statement explains the imperatives for universities to change from a labor based society to the one that is knowledge driven. Abbas (2014) posits

that for any society to transform to an information economy there is the need for digital/media literate workers. Corroborating this assertion, Lankshear and Knobel (2003) argue that in this 21st century, academics must be media literate to be able to handle burgeoning variety of information and multimedia technologies. The New Media Consortium (2011:3) submits that “digital media literacy continues to rise in importance as a key skill in every discipline and profession” Therefore, the possession of digital literacy skills is important for today’s 21st century academics irrespective of the discipline, gender or age, but many academics still repel use of electronic instructional media in lecture rooms (Balash, Yong and bin Abu, 2011).

Agbo (2015) assessed digital literacy skills of academics at the University of Nigeria in Nsukka, Nigeria. The study used a descriptive survey design to collect data from a population of 354 academic staff through questionnaire. Data was analysed using percentages, mean scores and frequency tables. The findings of the study revealed that academics possess digital literacy skills such as booting of the computer, surfing the Internet and using the World Wide Web. The findings of the study indicated that academics were able to find information for academic purposes, save files from a web page, utilise various search engines in sourcing academic materials and connecting to the Internet. Further findings revealed that academics were able to send and receive e-mail messages, download files from the internet and send attachments with e-mail messages. However, the study found a majority of academics were unable to use e-resources in teaching, upload files on the Internet, use web 2.0 tools in teaching, partake in on-line discussion. The author concludes that traditional literacy skills are no longer sufficient for academics who wish to take advantage of the opportunities offered by the digital era. A considerable number of studies on technology adoption and use focus on digital competence, however, the relationship between this phenomenon and adoption and use of technology is not well established in literature.

3.5 The Influence of Moderating Factors on Adoption and Use of Electronic Instructional Media

A moderating variable is an interacting term used when the relationship between independent and dependent variable is surprisingly weak, inconsistent or nonexistent (Abubakar and Ahmad, 2013). The four main constructs of the UTAUT (performance expectancy, effort expectancies, social influence, and facilitating condition) have been found to be moderated by

four variables (age, gender, experience and voluntariness of use). This study sought to understand the influence of age, gender and teaching experience as moderators of adoption and use of electronic instructional media as stated in research question four.

Touray, Salminen and Mursu (2013) in a survey explored the influence of six moderating factors (age, gender, experience, complexity and education) on behavioural intention towards Internet use in Nigeria and Gambia. The findings revealed that experience and complexity influence behavioural intention towards use of Internet in both countries. The impacts of age, gender, income and education, however, vary significantly between these two countries. This finding indicates that the influence of moderating variables like age, gender, income and education influence behavioural intention towards technology use. However, the authors note that there is dissimilarity between the influences of the moderating factors on behavioural intention across national boundaries. The authors found that gender, income and education strongly influenced behaviour towards Internet in Gambia than in Nigeria, but the influence of age was stronger in Nigeria.

Akbar (2013) in an online survey of students' acceptance and use of technology at the Carnegie Mellon University in Qatar, found that performance expectancy, effort expectancy, facilitating conditions and attitude towards using technology were significant determinants of technology adoption and use. The study also found that all the moderating variables had significant influence except for experience, which was surprisingly not significant. Age was found not to have a significant moderating effect on performance expectancy, effort expectancy and social influence. Marchewka, Liu and Kostiwa (2007) found age to be a significant moderator of technology adoption and use in educational settings.

Schumacher and Morahan-Martin (2001) observe gender differences in technology adoption and use between male and female. Findings indicate men and women perceived and used electronic instructional media differently. Macharia (2011), in a web survey of 1500 academics in East Africa found age, gender, voluntariness, and computer self-efficacy as significant moderators, while the moderating effect of experience on both effort and performance expectancy was found to be non-significant. The findings indicate that age, gender, previous computer experience moderate the relationship between the constructs of UTAUT and technology adoption and use.

Olatokun (2007) identifies reasons for differential access and impact of new technologies by men and women from three different variations: physical access to infrastructure, social cultural issues, education and skills, financial resources in providing answers to gender issues in the way electronic instructional media are used in Nigerian universities. Olatokun argues for increased availability and access to electronic instructional media for female academics. Findings indicated that effort should be made to make female academics a part of the decision making team on ICT issues in the university. The submission of Olatokun is affirmed by other researchers (Tshukundu, 2002; Gadio, 2001; Hafkin and Taggart, 2001). This proposition underscores the need for gender equity in the blueprint of universities on adoption and use of electronic instructional media by academics (Morgan, Heeks and Arun, 2004).

Experience is an “accumulative memory process of all kinds of senses and feelings” (Qi, Li, Li and Shu, 2009:394). Scholars (Ball and Levy, 2009; Thompson, Compeau and Higgins, 2006; Bhattacharjee and Premkumar, 2004; Cassidy and Eachus, 2002; Parthasarathy and Bhattacharjee, 1998)) found that experience had a significant effect on academics’ behavioural intention to use electronic instructional media. However, teaching experience has not been widely investigated in relation to technology use by academics (Onwuagboke, Singh and Onwuagboke, 2014). Rather, literature was more extant on the influence of demographic variables such as gender and age whose effect as moderators and independent variables were clearly established in literature from different contextual settings. Although the synthesis of literature demonstrates the moderating effect of experience on technology adoption and use, the finding is too general and inadequately specific in the context of this present study. There is a need to situate this construct (experience) in the confines of educational context by examining the moderating effect of teaching experience on adoption and use of electronic instructional media.

3.6 Challenges of Adoption and Use of Electronic Instructional Media among Academics

Despite the fact that it is imperative for academics to adopt and use electronic instructional media in teaching, they are confronted with several challenges, which if not understood and addressed could act as inhibitors. Various factors have been identified as challenges to technology adoption in literature by scholars (Chukwunonso and Oguike, 2013; Nwosu and

Ogbomo, 2011; Onasanya, Shehu, Oduwaiye and Shehu 2010; Nicolle and Lou, 2008; Zayim, Yildirim and Saka, 2006; Butler and Sellbom, 2002; Guha, 2000; Preston, 2000 Nantz, and Lundgren, 1998). These scholars noted the following challenges: inadequate training (Zayim, Yildirim and Saka, 2006); lack of support staff (Nantz and Lundgren, 1998); slow internet access and reliability of technology (Butler and Sellbom, 2002); technological competence and stress involved with keeping up with technological advancements (Nicolle and Lou, 2008). Other factors as identified in literature include workload (Guha, 2000) and time (Chukwunonso and Oguike, 2013). This theme is addressed by research question five, which examined the challenges faced by academics on adoption and use of electronic instructional media.

The synopsis of literature on this theme showed that academics in Europe, America, Asia Africa and the rest of the world encounter difficulty on adoption and use of electronic instructional media. In the United States, Lin, Huang and Chen (2014) examined the challenges faced by academics on adoption and use of electronic instructional media. Using mixed methods, the study surveyed academics teaching Chinese as a foreign language in US universities. The study found inadequate support and lack of time to develop technology-driven lectures as impediment.

Further research into challenges on adoption and use of electronic instructional media in educational settings revealed that attitude of academics are inherent significant barrier (BECTA, 2004). Previous scholars reported that some academics are resistant to the use of electronic instructional media for teaching purposes (Gomes 2005; Cuban, Kirkpatrick and Peck, 2001). According to Anderson (1997), there are physical and cultural factors to technology adoption and use by academics. These are lack of reliable access to electricity; limited technology infrastructure (especially internet access, bandwidth, hardware and software provision); available software; geographical factors; gender; level of media literacy skills; access to professional development and age.

Some scholars have provided evidence supporting a direct relationship between technology anxiety and computer use (Chua, Chen and Wong, 1999; Howard and Mendelow, 1991). Technology anxiety refers to “the feeling of discomfort, apprehension and fear of coping with ICT tools or uneasiness in the expectation of negative outcomes from computer-related operations” (Rahimi, Yadollahi, 2011:204). Technology anxiety, therefore, has a strong

negative effect on academics' adoption of electronic instructional media (Parayitam, Desai, Desai and Eason, 2010; Beckers, Wicherts and Schmidt, 2007; Imhof, Vollmeyer and Beierlein, 2007; Agarwal, Sambamurthy and Stair, 2000). Academics that are technophobic may damage the equipment or doubt the efficacy of electronic media in teaching (Mac Callum, Jeffery and Kinshuk, 2014a). According to Teo, Lee, and Chai (2008), technology anxiety should be addressed and resolved at the institutional level to reduce any form of resistance to technology use (Buabeng-Andoh, 2012). Another related study by Mac Callum, Jeffery and Kinshuk (2014b) examined the influence of technology anxiety among other variables on the attitude of academics towards mobile learning adoption. The study found that technology anxiety prevents academics from developing their digital literacy competence.

Attuquayefio and Addo (2014) did a review of literature on challenges facing academics in higher institutions. A synopsis of their findings revealed lack of institutional support; financial support; insufficient time to learn how to use new technologies; access to computer; technical support and training; resistance to change, negative attitude, awareness, relevance, ease of use, attitude and computer literacy as impediments to technology adoption and use. They submit that knowing the extent to which these challenges inhibit individual academic or the institution will assist in decision making.

Studies emanating from Africa include those of Harvey (2012), in Malawi. Harvey conducted a study on the state, adoption and use of technology by students and academics at Mzuzu University. The study found poor network infrastructure, limited number of computers, high cost of internet access, persistent power outages, and the lack of relevant digital literacy skills. In Tanzania, Mtebe (2014) found lack of access to computers and to the Internet, low Internet bandwidth, lack of policies, and lack of skills as inhibitors. In line with the penetration of cellular phones, the infrastructural challenges, however, have been improving very rapidly in Africa, In Nigeria, several factors have been identified as challenges to adoption and use of electronic instructional media and these are in convergence with the findings of other scholars from the rest of the world. The factors as identified in literature include: low levels of computer literacy (Akuegwu, Ntukidem, Ntukidem and Jaja, 2011), lack of computer confidence (Yusuf and Balogun, 2011), technical support (Umoru and Okeke, 2012; Issa, Ayodele, Abubakar and Aliyu, 2011); funding to provide adequate numbers electronic instructional media within the university system and necessary

infrastructure (Agbatogun, 2013); power outage and exorbitant cost of an alternative power supply (power generator) (Issa et al., 2011; Oye et al., 2011); scepticism of many academics (Achimugu, Oluwagbemi and Oluwaranti, 2010).

Oye and Iahad (2009), in a pilot study at the University of Jos found that majority of academics identified time as a major challenge to technology adoption and use. This study also reported that lack of training and high cost of electronic instructional media constrained academics from adoption and use of electronic instructional media. Other previous studies established that lack of awareness on new digital innovations; low bandwidth; high cost of technology; inadequate technological facilities; excess workload (Osinaike and Adekunmisi, 2012; Umoru and Okeke, 2012; Ijeoma, Joseph and Franca, 2010). Another similar study by Archibong and Effiom (2009) at the Cross River University of Technology in Nigeria found weak infrastructure, financial constraints and lack of access to hardware and software as inhibitors to technology adoption and usage. In alleviating these challenges, Archibong and Effiom examined the training needs of academics. They reported that academics would need training on how to design new learning activities, electronic presentation of lectures and making use of the Internet.

Existing research showed that information systems and their adoption are largely shaped by the characteristics of organisation (Kurnia et al., 2013). Most studies on the discourse on challenges or inhibitors to technology adoption and use leverage on quantitative approach. This theme is addressed by research question five of the current study which sought to examine the challenges facing academics on adoption and use of electronic instructional media. This current study, therefore, sought to understand the challenges confronting academics on adoption and use of electronic instructional media using mixed method. Questions raised in the instrument (see section F of Appendix 1) are those seeking information from academics on issues such as budgetary allocation for acquisition and installation of electronic instructional media, ICT anxiety; population of the students; time, technical support and adequate support from librarians among others.

Many studies have attempted to elucidate adoption and use of technology from two dimensions: inhibitors and promoters of technology adoption. These two dimensions could be likened to the two sides of a coin. Both the inhibitors and promoters of technology adoption

and use are important factors to be considered when seeking to develop, implement or improve upon the use of instructional technology. This is particularly important because schools at all levels of education now admit and train students who now live in a technology rich society. The study of Tian (2004) underscores the disposition of the educational stakeholders to the promoters and inhibitors of technology adoption. In the view of this scholar, university stakeholders should rise up to revolutionise the educational environment and ensure landmark transformation. As done in the banking sector all over the world, the onus lies on stakeholders in African universities to ensure critical success factors for adoption and use of electronic instructional media are identified and addressed.

3.7 Broader issues

The broader issues in this study comprise e-learning and digital divide. These broader issues were examined in a higher education context and differential extent of technology adoption and use on account of such factors as digital divide with specific focus on intra-organisational digital divide.

3.7.1 E-Learning

E-learning refers to the use of electronic media such as computer, audio, video and network among many other media to enable the transfer of skills and knowledge (Beyers and Hlala, 2015). It promotes knowledge acquisition and exchange and is capable of reducing the digital divide (Campanella et al, 2008). According to Mbengo (2014:16), e-learning is significant in that “it improves flexibility in education delivery”.

In a higher institution in the UK, Petit dit Dariel, Wharrad and Windle (2013) examined e-learning adoption in nursing education. Using an exploratory descriptive design, a qualitative method involving the use of the interview was used to gather data from 38 participants in a division of nursing. The data was analysed using factor analysis to develop in-depth narratives. The findings of the study showed that e-learning proponents saw the efficacy of e-learning in developing future nurses. The ‘Humanists’ did not use e-learning because they believed in human interaction; the ‘Sceptics’ did not believe that technology could improve learning outcomes; and the ‘Pragmatics,’ only used such technologies to post lecture notes online and supplement what they covered in class. The authors succeeded in moving technology adoption studies beyond Roger’s categorisation of ‘early adopters’ or ‘laggards. Aside from factors such as lack of time, training, and other institutional factors acting as

barriers to e-learning adoption, fundamental issues such as tension between espoused didactic viewpoint, perceived affordances of technology, and the reality of teaching influenced how these nurse academics responded to previously identified institutional factors. In promoting e-learning adoption and use, Petit dit Dariel, Wharrad and Windle (2013) aver that institutions should go beyond the status quo and meet the needs of academics by reducing these challenges. The researcher follows the example of these authors by seeking information on factors influencing adoption and use of electronic instructional media through research question five.

Al-alak and Alnawas (2011) examined attitudes of academics and adoption of e-learning in Jordan universities using TAM as the theoretical frame for the research. Structural equation modelling was used to test the validity of the research model and the relationship among its constructs. The findings of this empirical study showed that perceived ease of use and perceived usefulness significantly predicted behavioural intention of academics to adopt e-learning. The findings indicated that experience and computer knowledge were the strongest predictors of behavioural intentions. The implication of this finding is that when electronic instructional media is found to be compatible with the work schedule of academics and existing practices, then adoption and use becomes easy. Management support was also found to have a significant and positive influence on attitudes of academics towards e-learning adoption. Similarly, Venkatesh and Bala (2008) reported that adoption and use of technology becomes more appropriate when there are considerable changes in organisational structure. The limitation of this study is that the influence of demographic variables such as age, gender and academic rank on e-learning was not examined.

Nkonki, Ntlabathi and Mkonqo (2013) explored Blackboard adoption, a Learning Management System (LMS) at an institution of higher learning in South Africa based on Rogers' (1995) diffusion of innovation theory. In this qualitative study, data was obtained from academics across faculties and departments through a pre-structured survey questionnaire sent through email. Purposive sampling was used to select academics who use the Blackboard. Nineteen academics across different disciplines responded to the qualitative survey questionnaire. Findings revealed that academics found the blackboard beneficial in their teaching. Findings further revealed that most of the academics were at the basic level of operating and using the Blackboard. The study revealed that the use of the LMS facilitates

communication, storage of materials, access to materials, discussion classes, engagement, instant feedback, and out of class interactions.

Many scholars note that perceived usefulness and perceived ease of use had a significant effect on the behavioural intention to use e-learning system (Tung and Chang, 2008; Ong and Lai, 2006). However, Brower (2003) identifies fear as a major reason for reluctance among academics to adopt e-learning as a new way of teaching. In overcoming this challenge, Bonk (as cited in Al-alak and Alnawas, 2011) submits that academics should develop skills that will enable them adopt technology in teaching. He recommends knowledge of application software, online courses design and ability to serve as a motivator for use of e-learning technologies among students.

3.7.2 Digital and Intra-Organisational Digital Divide

Digital divide refers to the discrepancies between nations or socio-economic groups and corresponding access to technologies (Norris, 2001; Waycott, Bennett, Kennedy, Dalgarno and Gray, 2010). In the view of Warschauer (2004), digital divide is the disparity in access to the social and organisational resources towards use of technologies. A more acceptable definition for this present study is given by the Digital Divide Network (2004), and it is described as the gap between those who can effectively use new information and communication tools, such as the internet, and those who cannot. However, the Organisation for Economic Cooperation and Development (OECD, 2008) submits that “digital divide” constitutes the “differences between individuals, households, companies, and regions in terms of access and usage of ICTs.

Digital divide is one of the ways of measuring inequality in any society (Tien and Fu, 2008; Kaminer, 1997). It is found everywhere and exacerbated by social characteristics (such as income, education, occupation, age, gender, ethnicity and location) of individuals (Gyamfi, 2005). According to Dolničar, Prevodnik and Vehovar (2014), the digital divide is not just about the disparities that exist in possession of technologies, it is also about the gap that exists in use of technology. Generally, there are three dimensions to the digital divide: technology access, usage and applications, however, the quality of access to these technologies is essential (Mutula, 2005). This is because inferior technological tools will

reduce the benefits that academics ought to derive from using electronic instructional media in teaching (DiMaggio and Hargittaim, 2001).

Narrowing down the concept of digital divide to organisations, a concept known as intra-organisational digital divide evolves. The dimensions to intra-organisational digital divide include disparity in technological tools (hardware, software and network connections), autonomy of use, skill, social support, purposes for which the technology is used, ownership and ability to use electronic instructional media (Acilar, 2011; Khalid, 2011; DiMaggio and Hargittai 2001). Earlier studies, such as Hymes (1974) report that digital inequality involves disparity in knowledge about how to log on, conduct searches, download information, internet search skills, knowledge about software, hardware and networks and troubleshooting skills. Sovereignty in terms of use of electronic instructional media is a strong indicator in intra-organisational digital divide. In universities where academics have uninterrupted access to the Internet both at work and home and there are no access restrictions for real time on-line access, digital inequality and its effect become imperceptible.

In university environs, digital divide is evident between the developed and less developing nations in terms of access, use and technological confidence and skills (Jones, 2004). At the institutional level, DiMaggio and Hargittai (2001) point out that the dimensions to intra-organisational digital divide include the differences in technological tools (hardware, software and network connections), sovereignty of use, skill, the available social support, and purposes for which technology is used. The scholarly work of Oyelaran-Oyeyinka and Lal (2005) mirrors that digital inequality within, and between universities in African countries arises from differences in technological devices that people use to access the Internet; social support system; purpose for which the technology is used and level of technological competence. Moreover, reasons such as those reiterated by Oyelaran-Oyeyinka and Lal (2005) could also serve as the rationale for the digital divide that exist between academics in developed and less developed countries.

Although, universities in developed nations have been reaping the full benefits of electronic instructional media unlike their counterparts in less developing nations, Iskandarani (2008) decries the situation and accede that the knowledge gap between the information-rich and the information-poor countries should be bridged. Ogunsola and Okusaga (2006) note that the

divide is evident in form of affordable and equitable access to telecommunications infrastructure, hardware, software and networking facilities, and capacity building in institutions. The Association of African Universities (AAU, 2009) observes that digital divide exists between universities in the global North and South, and is evident in the form of ICT affordability, availability and accessibility. Some of the effects of the digital divide have been underscored by scholars such as Ricoy, Feliz and Couto, (2013) who note that digital divide affects students all over the world.

Ricoy, Feliz and Couto (2013), at the University of Vigo in Spain, conducted a study to ascertain the presence of digital divide indicators among students. Ninety-one first year students who registered for the academic year 2012-2013 participated in the study. There were 79 females and 12 males aged between 18 and 46 but the average age was found to be 21 years. The study found several inequalities between students especially in the types of electronic instructional media they can use and the diversity of use. The study revealed that one group of participants was less competent in the use of electronic instructional media. The study concludes that there is a need to introduce palliative measures to boost usage of electronic instructional media within the academe to avoid any of the negative effects of digital divide in the academic development of the students.

Dika and Singh (2002) note that the digital divide not only affect access to institutional resources, it also affect opportunities to use technology. The digital divide has also resulted in disciplinary difference in technology adoption and use among academics. Sorenson and Stewart (2004) and Gombachika and Kanjo (2008) observed disparity in technology adoption and use among academics in science, engineering and humanities. Moreover, Olatokun (2007) found that there is gender disparity in the use of electronic instructional media among academics.

Elzawi, Kenan, Wade and Pislaru (2012) examined the global digital divide between developed and less developed nations. The study focused on the digital divide and university teaching at the Alfateh University in Libya. Findings revealed that poor availability, low speed internet connection, poor access to specialised online databases, technical difficulties and high cost of internet connection constitute to the digital divide. Similarly, in many African countries, the digital divide exerts infrastructural constraints and makes it extremely

challenging for stakeholders in the education industry to acquire, adopt and use instructional technology (Oyelaran-Oyeyinka and Lai, 2006).

Anunobi (2015) examined use of electronic instructional media among student-teachers in universities in North Central Nigeria using a descriptive survey design. A total of 638 student-teachers participated in the study. The study found that the student-teachers were average in their use of electronic instructional media. The study concludes that the extent of technology use corresponds with level of digital literacy.

Although African countries are developing strategies that will enable them overcome the digital divide, the gap between the rural and urban areas, and between the rich and poor communities remain conspicuous (Olson urt deMaagd, Tarkleson, Yook and Egidio, 2011). In overcoming the digital divide, therefore, Nigeria and other African countries have been counseled to strengthen their national information and communication infrastructural policy and ICT initiatives in line with the demands of the global information era (Ogunsola and Okusaga, 2006). The authors argue that universities should seek for globalisation within the knowledge economy, and give adequate attention to the development of technological infrastructure and competency required by academics to utilise these technologies.

In overcoming intra-organisational digital divide, the following questions as posed by O'Mahoney and Barley (1999) need to be addressed by various universities:

1. To what extent is use restricted by regulations, time limits, filters or other technical impediments to internet access?
2. What kind of usages is permitted (and how does this vary with the trio responsibilities of academics)? If access is at work what kinds of filtering or monitoring systems are in use?
3. How sternly are rules, restrictions and regulations enforced?

3.8 Summary

Literature has been reviewed extensively on factors predicting electronic instructional media adoption and use in the educational setting. The chapter provided a research synthesis on the independent variables in the study such as performance expectancy, effort expectancy, social influence, facilitating condition, behavioural intention trialability, compatibility and observability. This has provided clarity on research questions one and two of the present

study. The literature review also provided highlights on external factors that could facilitate or inhibit the adoption and use of electronic instructional media among academics.

This research synthesis also revealed that various technology adoption and use models have been used to understand factors predicting adoption, but the most robust of them all is UTAUT being validated to predict strongly factors determining users' adoption and use of technology in educational settings. There was also evidence from literature on the flexibility of the UTAUT, allowing for expansion or deduction of constructs. This is the rationale for the choice of the UTAUT as the major theoretical frame underpinning this study. Several studies have used the DOI to predict technology acceptance but studies that have used a combination of DOI and UTAUT are relatively few. Studies emanating from Nigeria focused on variables such as attitudes towards the utilisation of technology, but this study will attempt to elucidate behavioural intention and actual use of electronic instructional media for the purpose of teaching. Empirical evidence on the extent of adoption and use of electronic instructional media in universities are few. It is a largely unanswered question which research question one of this study seeks to address.

Many studies are found in Asia and other countries like Europe, America, Australia, and Africa on technology adoption and use, but there seems to be varied factors influencing technology adoption and use. This could be because of the variation in culture, geographical settings and the disparity in technological developments in various universities and nations of the world. The review revealed that several studies have investigated adoption and use of electronic instructional media from various perspectives: individual, psychological, environmental and even technological. These studies were limited in scope covering areas such as attitude of academics, availability and accessibility to technology. Some others focused on adoption and use of specific software such as the LMS. Moreover, a majority of the empirical and theoretical evidences were found in developed nations and Asia. In terms of methodology, extant literature employed quantitative methods and in practice, many studies had examined the challenges or barriers to technology use both from educational setting and other contextual setting. But few of these studies identified plausible solution to these challenges. Therefore, this study sought, through the use of mixed methods, to understand adoption and use of electronic instructional media among academics in selected Nigerian universities.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

Research methodology is the “collection of methods or rules by which a particular piece of research is undertaken in line with the principles, theories and values that underpin a particular approach to research” (Somekh and Lewin, 2005:346). Methodology is usually influenced by the paradigm on which the theoretical perspective for the study is placed (Walter, 2006:35). Similarly, Given (2008:516) views methodology as the “assumptions, postulates, rules, and methods or the blueprint of roadmap that researchers employ to render their work open to analysis, critique, replication, repetition, adaptation in choosing the research methods”. Methodology and methods are two different terms. Mackenzie and Knipe (2006) expressed serious concern over the use of these terms interchangeably. They report that the distinction between research methodology and research methods is that research methodology is associated with the paradigm or theoretical framework while research method refers to procedures or tools used for data collection and analysis.

The purpose of the research methodology chapter is to provide underlying assumptions about the nature of the reality being examined, what constitutes “valid” research and which research methods are appropriate to a particular research endeavour (Myers, 1997). These sets of beliefs and values are called paradigms (Denzin and Lincoln, 2005; Kuhn 1996; Kuhn, 1962), or theoretical traditions (Patton, 2002; Prasad and Prasad, 2002), or research orientations (Tesch, 1990).

The study sought to investigate the extent of adoption and use of electronic instructional media and factors influencing adoption and use of electronic instructional media among academics in selected Nigerian universities. The following research questions are addressed: What is the extent of adoption and use of electronic instructional media in selected Nigerian universities?; What factors influence adoption and use of electronic instructional media?; How do media literacy skills influence adoption and use of electronic instructional media?; What is the moderating effect of gender, age and teaching experience on adoption and use of

electronic instructional media?; What challenges are faced in the adoption and use of electronic instructional media by academics in selected Nigerian universities?

This chapter is organised into these sections: Research paradigm; Research approaches; Research design; Population of the study; Sampling procedure; Data collection techniques; Instrument of data collection; Validity and reliability of instrument; Survey questionnaire; Data collection procedure; Data analysis and Ethical issues.

Saunders, Lewis and Thornhill (2009) depict the steps to follow in research by the research onion (see Figure 4.1). The entire research process as illustrated by the research onion, suggests that the outer layer of the onion is the philosophical underpinning of the research and that decision making in research is driven by the philosophy or paradigm on which the study is premised. The outer layer of the research onion is the most important in any scholarly endeavour because it determines the data collection techniques and analysis procedures. With this in mind, the researcher presents the research paradigm that guided the study in section 4.2.

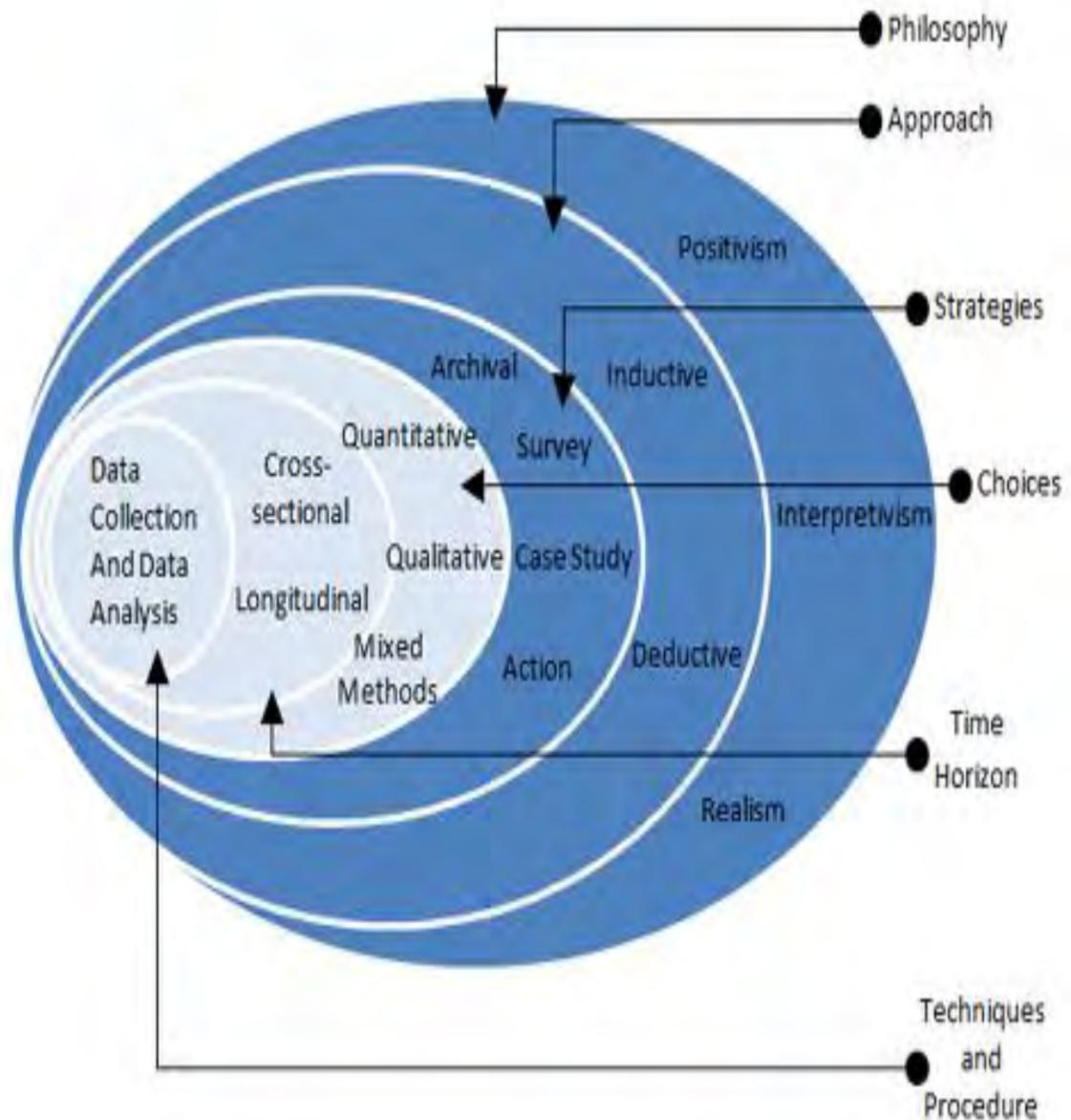


Figure 4.1: Research Onion (Source: Saunders, Lewis and Thornhill, 2009)

4.2 Research Paradigm

The word paradigm, derived from the Greek word *paradeigma*, was first used by Thomas Kuhn in 1962 to denote a conceptual framework or a convenient model for examining scientific problems and finding solutions. Paradigm is a “loose collection of logically related assumptions, concepts, propositions that orient thinking about the research” (Bodgan and Biklen, 1998:22). In other words, it is the “philosophical intent or motivation” for undertaking a study (Cohen and Manion, 1994:38). It also refers to an integrated cluster of substantive concepts, variables and problems attached with methodological approaches and

data collection tools Kuhn (1977). Kuhn explains further that paradigm denotes the research culture, and is driven by a set of beliefs regarding the nature and conduct of research. Bryman (2004) refers to paradigm as basic beliefs and dictates, which influence what should be studied and how it should be done. Many other scholars such as MacNaughton, Rolfe and Siraj-Blatchford (2001); Cohen and Manion (1994); Bodgan and Biklen (1998); Olsen, Lodwick, and Dunlop (1992) also provide an explicit elucidation of the word paradigm.

Mac Naughton, Rolfe and Siraj-Blatchford (2001:32) report that paradigm comprises three elements: belief about the nature of knowledge, methodology and criteria for validity. Other scholars (Cresswell, 2009; 1998, 1994; Guba and Lincoln, 1994; Burrell and Morgan, 1979) provide classification for research paradigms. For instance, Burrell and Morgan (1979) outline four major classes: functionalist, interpretive, radical humanist and radical structuralist. Guba and Lincoln (1994) classify paradigms into positivism, post-positivism, constructivism and critical theory. As a follow up to this, in 2000, Guba and Lincoln identify participatory research as the fifth type. Some other scholars provide three major categories of paradigms which are positivism, interpretivism and realism (Saunders Lewis and Thornhill, 2009; Orlikowski and Baroudi 1991). Previous studies, however, on technology adoption and use derived their philosophical assumptions from post-positivism (Chukwunonso and Oguike, 2013; Mandal and McQueen, 2012; Tobbin, 2010).

Positivism and post-positivism are the two most popular paradigms among social science researchers (Creswell, 2009). Positivism was the dominant scientific paradigm until the mid-20th century but was replaced after World War II by post-positivism (Mertens, 2005). Positivism, sometimes referred to as “scientific method or science research”, is derived from rationalistic and empiricist philosophy that originated with Aristotle, Francis Bacon, John Locke, August Comte and Emmanuel Kant” (Mertens, 2005:8). The positivism paradigm “reflects a deterministic philosophy in which causes probably determine effects or outcomes” (Creswell, 2003:7). Positivism is often used synonymously with quantitative research (Sarantakos, 2005: 34).

The positivists believe that any phenomenon could be studied empirically or logically (Aliyu, Bello, Kasim and Martin, 2014) by applying methods of the natural sciences to the study of social reality (Bryman, 2008; Mertens, 2005). The philosophical assumption for positivism research is that nature is ordered, regular and reality exists independent of human behaviour

(Polit and Beck, 2012). The central focus of such studies is to test theories, describe an experience through observation or measurement in order to make predictions (Bhattacharjee, 2012; O' Leary, 2004) or explain causal laws (Neuman, 2011).

The positivists are often times challenged by the interpretivists and the critical theorists for various reasons. Some of the criticism against positivism is that it ignores the role of humans in constructing reality (Elshafie, 2013; Scott and Usher, 2011; Cohen, Manion and Morrison, 2007; Blaikie, 2004; Guba and Linclon, 1994; Gage, 1989). The interpretivists disapprove the objectivity and the use of scientific methods to study human behaviour, stating that human behaviour is neither stable nor uniform (Gage, 1989). The critical theorists also opposed positivist researchers on the basis that they see the world as a closed system, thereby totally ignoring its complexity (Cohen et al., 2007; Blaikie, 2004). Proponents of critical theory, therefore, reject the three basic postulates of positivism which are objective reality, the subject-object distinction and value free social science. Positivism is also critiqued on the ground that it fails to understand the multiplicity and complexity of the world of individuals (Scott and Usher, 2011:27).

Guba and Linclon in Elshafie (2013) critique positivism paradigm from two points of view: the internal or "intraparadigm" analysis (i.e. context stripping and exclusion of meaning and purpose) and the external or "extraparadigm" analysis i.e. the theory-ladenness of facts and the under-determination of theory. Despite these criticisms, Dwivedi et al. (2008) found that seventy-five percent (75%) of studies used the positivism paradigm. This is a clear indication that positivism is still a dominant epistemology in research. However, Guba and Linclon (1994) submit that the shortcoming of positivism can be avoided by the use of qualitative data. These reasons and the immature pragmatism of positivism (Richards, 2003) provide the rationale for the choice of post-positivism paradigm for this study.

4.2.1 Post-positivism

Post-positivism, though derived from positivism, recognises that the researcher should be 'open' to other means of inquiry (Clark, 1998). This presupposes that there is no room for positive claims of knowledge when studying human subjects (Creswell, 2009). This paradigm has the same principles as positivism, but allows more interaction between the researcher and the participants (Willis, 2007) by using additional methods. Positivism, therefore, involves

the use of both the quantitative and qualitative methods for data collection (Creswell, 2008). According to Taylor and Medina (2013), post-positivism is a modified scientific method for social scientists. They acknowledge that this paradigm produces objective and generalisable knowledge about any social phenomenon, and also ascertain the relationships amongst pre-defined variables. The strength of this paradigm in social science research is that rational inferences about an occurrence can be made from both empirical observations and logical reasoning. The post-positivist researcher either belong to the subjective, objective or critical realism. Post-positivists are often driven by the belief that there is an external reality that is independent of a person's thinking, but such reality cannot be known with any degree of certainty. To the post-positivists, "any perception of reality is drawn from empirical observation and existing theory and generalisation taken from original positivism remaining predominant" (Pickard, 2007:10).

Post-positivist research possesses characteristics such as modified dualist/objectivist philosophy as the epistemology (Guba and Lincoln, 1994:110). The ontological belief that drives post-positivist research is critical realism (Guba, 1990). Critical realism is the belief that reality exists outside the individual's mind, but this can be discovered within "a certain realm of probability" (Mertens, 2010:14). The ethical behaviour (axiology) of positivists is based on respecting privacy of respondents through the use of informed consent in research. Mertens (2010) observes that to the post-positivist researcher, ethics is intertwined with methodology. The researcher, therefore, is under an ethical obligation and must follow moral standards in ensuring the integrity of the research (Howe and Moses 1999). In line with this submission, Nolen and Putten (2007), advised that post-positivist researchers should follow the three ethical standards published by American Educational Research Association (AERA), (2011): informed consent, respect as well as confidentiality and autonomy of the participants.

The post-positivist's methodology is usually "modified, experimental or manipulative" in nature, and the research can be done in natural setting (i.e. quasi experiments). The methodology could also involve the use of qualitative methods (Guba, 1990), therefore, the methodology is both quantitative and qualitative (Letourneau and Allen, 1999). A combination of these two methods is informed by the deterministic philosophy "that quantitative research cannot successfully evaluate the full range of human behaviour (Taylor,

2000:68), and the fact that neither quantitative nor qualitative approach can proffer solution to every social behaviour”, hence the mixed methods research address the inherent weaknesses of the two research approaches (Yin, 2011; Bryman, 2008).

The justification for the choice of post-positivism paradigm for this present study is that it allows a combination of both quantitative and qualitative methods (Olasina, 2014; Lather, 2006). The combination of both quantitative and qualitative methods has been described as a key element in the improvement of social science research (Gorard, 2004:7). This submission is also underscored by other scholars (Gorard, 2004; Johnson and Onwuegbuzie, 2004; Creswell, 2003; Thomas, 2003; Krathwohl, 1993). Also, post-positivists identify and assess causes that influence outcomes in any research with the aim of testing, verifying and refining a theory (Creswell, 2009:7). Post-positivists also recognise the intricate relationship between individual behaviour, attitudes, external structures and socio-cultural issues (Crossan, 2003). The current study was informed by the post-positivist paradigm to test the influence of independent variables such as performance expectancy, effort expectancy, social influence, facilitating condition, trialability, etc on adoption and use of electronic instructional media. For this present study, the post-positivist paradigm was used to gather data relevant to the research problem.

4.3 Research Approaches

The three common approaches to conducting research are quantitative, qualitative, and mixed methods. Quantitative research approach involves the collection of data so that information can be quantified and subjected to statistical treatment in order to support or refute “alternate knowledge claims” (Creswell, 2003:153). There are three broad classifications of quantitative research: descriptive, experimental and comparative (Leedy and Ormrod, 2001). According to Williams (2007), descriptive research approach is a basic research method that examines the situation as it exists in its current state, either by observation or the exploration of correlation between two or more phenomena. Creswell (2003:18) reports that quantitative research “employs strategies of inquiry such as experimental and surveys and collect data on predetermined instruments to yield statistical data”. In qualitative approach, the researcher understands the phenomenon from the meaning individuals or groups attribute to a phenomenon (Cresswell, 2007).

This study adopted the mixed methods approach to provide answers to the research questions raised in this thesis. Mixed methods research is defined as “the class of research that combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study” (Johnson and Onwuegbuzie, 2004:20). The mixed methods approach was chosen because it is holistic in nature and capable of providing more certainty in the results (Giddings, 2006). The adoption of mixed methods approach for the current study was to provide complementarity in terms of elaboration, enhancement and clarification (Creswell, 2003; Thomas, 2003; Krathwohl, 1993). Overall, data collection involving both quantitative and qualitative data allows for deductive and inductive investigation in the same study and enable the researcher to investigate, predict, explore, describe and understand the phenomenon (Johnson and Onwuegbuzie, 2004; Creswell, 2003; Tashakkori and Teddlie, 2003; Sale, Lohfeld, and Brazil, 2002; Mingers, 2001).

The choice of the mixed methods approach bears similarities with previous studies (such as Oshinaike and Adekunmisi, 2012; Becking, 2011; Mushi, 2010; Blankenship, 1998; Jacobsen, 1998). According to Punch (2005), a combination of both qualitative and quantitative methods is valid and often used in social science research. Johnson and Onwuegbuzie (2004) posit that mixed methods approach is an extension and not a surrogate for the quantitative or qualitative approaches to research. The overarching aim of using the mixed methods approach for this current study is to draw from the strength of both approaches, and minimise the weaknesses of quantitative and qualitative research (Johnson and Onwuegbuzie, 2004).

4.4 Research Design

Research design is the architectural backbone of a study (Polit and Beck, 2012). This is because the research design helps the researcher to “plan, structure and execute” the research to maximise the “validity of the findings” (Mouton, 1996:175). Therefore, it can be said, as proposed by Yin (2003:19), that research design is an action plan for getting from here to there, where ‘here’ may be defined as the initial set of questions to be answered and ‘there’ is some set of conclusions or answers”. Research design also refers to the structure of a study (Babbie and Mouton, 2001), showing a clear description of the various processes by which the research is to be undertaken, how the research is conceptualised and the steps to the actual conduct of the research (Cheek, 2008). The whole essence of the research design is to

provide guidelines that will address the research problem and promote the validity of the results (Burns and Grove, 2003). Speaking on the elements of a good research design, Bickman and Rog (2009:11) submit that there must be connection between the research questions, objectives and how the research design aligns with the relevant data sources, research methods, sampling methods, reliability and validity of the findings.

Research designs include archival research; survey; case study and action research (Saunders, et al., 2009). Archival research makes use of administrative records and documents as the principal source of data (Saunders et al., 2009), however, data can also be obtained from historical documents (Bryman 1989). Case study research is an empirical investigation of a single unit in order to establish its key features and draw generalisations within real life context (Bryman, 2012; Robson, 2002). The data collection techniques for case study research are a combination of interviews, observation and documentary analysis. Action research involves a practical approach to a specific research problem within a community of practice (Bryman, 2012). Survey research is described as “assessment of the current status, opinions, beliefs and attitudes through the use of questionnaires or interviews on a known population” (McMillan and Schumacher, 2001:602). Survey helps the researcher to ascertain opinions or characteristics of a population of interest (Slavin, 2007). The survey research design was chosen for this study.

According to Saunders, Lewis and Thornhill (2012), there are two types of survey: cross-sectional surveys and longitudinal surveys. Saunders, Lewis and Thornhill (2012) explain that cross-sectional surveys study a particular phenomenon at a particular time. Longitudinal survey study a particular phenomenon over a period of time and it is sometimes referred to as the “diary” perspective (Saunders, Lewis and Thornhill, 2012:190). This study is cross sectional in nature because data was collected from academics on technology adoption and use over a period of time. The time horizon for the survey was set at 10 weeks.

The survey research design was chosen for this study because survey is one of the primary research methods in social science research and has been found useful for exploring subjects ranging from attitudes and intentions to motivations and behaviours (Reio, 2007). Moreover, survey is well suited to descriptive studies (Maree, 2010), and allows the researcher to look at relationships between variables which occur in real-life contexts. Additionally, survey

research is associated with the philosophical paradigm of post-positivism and is capable of providing estimates as precisely as possible on the nature of existing conditions or attributes of a population in order to quantify objective reality (Burns 2000). Survey research design allows numeric description of opinion of a population by studying a sample of that population (Cresswell, 2009). Lastly, the survey research design was chosen for this study because it has the capacity to generate quantifiable data on a large population group that is representative of a wider population for the purpose of testing theories (Leedy and Ormrod, 2001). Previous studies such as Oshinaike and Adekunmisi (2012) and Zayim, Yildirim and Saka (2006) have employed survey research design. Oshinaike and Adekunmisi (2012) used survey method to examine use of multimedia in teaching in a Nigerian university. Similarly, in Turkey, Zayim, Yildirim and Saka (2006) surveyed faculty members from basic and clinical science disciplines at a faculty of medicine in a state university.

4.5 Population of the Study

Population is the entire group of persons or objects of interest to a researcher (Burns and Grove, 2011; Polit and Beck, 2008). Population also refers to the target group that the researcher considers to be the subjects of the study (Punch, 2009). According to De Vos (2005), a prior knowledge of the population enables the researcher to set boundaries with regard to the participants. The entire set of participants about whom the researcher would like to make generalisations is described by scholars such as Polit and Beck (2012); LoBiondo-Wood and Haber (2010); Muijs (2004) and Babbie and Mouton (2002) as the “target population”. Brink, Van der Walt and Van Rensburg (2012) advise that researchers should carefully define and describe the population and specifically stipulate the criteria for decision making on whether an individual or object would or would not be classified as a member of the population. These criteria are described as eligibility, inclusion and distinguishing descriptors (Polit and Beck, 2008:228).

The population for this study includes academics from the two selected universities in South West Nigeria: University of Ibadan, a federal university, belonging to the first generation university and Covenant University, a private university. The University of Ibadan and Covenant University were selected purposively because they were among the top ten in the 2013 webometric ranking and the academic global ranking of universities in Nigeria (Nwagwu and Aginrin, 2008). Moreover, the University of Ibadan is the first and oldest

university in Nigeria and is well resourced in terms of infrastructure and academic manpower (University of Ibadan Annual Report, 2013) and one of the pioneering users of Internet technology as early as 1999 in Nigeria. Additionally, Covenant University was selected based on the fact that the university possesses variety of electronic instructional media tools for teaching and research. Academics from the faculties of Science, Arts and Technology from the University of Ibadan and School of Natural and Applied Sciences, School of Leadership Development and School of Engineering and Technology from Covenant University were purposively chosen because they have the majority of disciplines which are common to both universities. These disciplines include among others: Mathematics, Physics, Chemistry, Computer Science, Civil Engineering, Chemical Engineering, Petroleum Engineering, Languages and Mass communication in the institutions under study.

The population of academics in the three faculties was obtained from the University of Ibadan Annual Report, 2013) while that of CU was obtained from Establishment and Training Unit of the university. The number of academics in the selected faculties at the University of Ibadan was 502 and 230 in Covenant University. The total population for the study comprised 732 academics in both universities. Academics belonging to different cadre within the university were considered suitable for this study. However, the population excludes those academics who were on leave (sabbatical or study) because it was not possible to reach those categories of academics. Additionally, the population of the study also included some top university management staff: deans of the selected faculties (Science, Arts and Engineering/Technology), university librarians and directors of centre for information technology in each of the universities chosen for the study. The deans, university librarians and directors of the centre for information technology were chosen for this study because they are decision makers in the acquisition, installation and deployment of electronic instructional media in the university.

4.6 Sampling Procedure

Chainda (2011) refers to sample in any research as the actual group of people included in the study. It is usually a component or fraction of a whole or a subset of a larger population, selected by the researcher to participate in a study (Brink, Van der Walt and Van Rensburg, 2012). The method of selecting a sample from a population in such a way that it represents the population of interest is known as sampling (Brink et al., 2012). This representative

sample is similar to a larger population. According to Van der Stoep and Johnson (2009), the overall aim of sampling is to select participants, popularly known as representative sample for a particular study so as to most effectively accomplish the research goal. Sampling is important because in almost all cases, it is not realistic to study all the individual members of a population. Overall, the the purpose of sampling is to save time and optimise the use of resources in research endeavors (Brink et al., 2012).

In social science research, two general approaches to sampling are random sampling and non-random sampling. The random sampling is also known as probability sampling while the non-random sampling is popularly referred to as non-probability sampling. Random or probability sampling is one in which the researcher ensures that each member of the sampling frame has an equal chance of being selected as a study participant. To determine the suitability of using random sampling in any research, the researcher must know every element in the population, which is made possible through an available listing of the entire object or individual (Brink et al., 2012). Therefore, in probability sampling, knowledge of the population is an explicit prerequisite because it is only possible to conduct a probability sampling if the comprehensive list of all the possible units to be sampled is known (Uprichard, 2013). The aim of using random sampling is to eliminate subjectivity, obtain a sample that is both unbiased and representative of the target population and finally, to be able to make statistical inferences (Barbara and Shari, 2002). Random sampling allows the researcher to estimate the sampling error, reduces bias in the sample and makes it possible for the researcher to use inferential statistics correctly (Brink et al., 2012).

The four major techniques of probability sampling are simple random sampling, stratified sampling, systematic sampling, and cluster sampling. The difference between random sampling and non-random sampling or non-probability sampling is that each member of the population does not have an equal chance of being selected as a participant in the study. In this type of sampling procedure, the researcher does not know the size of the population or the members of the population. Therefore, samples for such a study are selected through purposive sampling, convenience or accidental sampling, snowballing and quota sampling.

From the total population of 732 academics in the two universities, the sample size for this study was determined using a published table for selecting sample sizes by Israel (1992), who recommended that for a population of 800, a sample size of 267 is considered appropriate at

±5%, precision level where confidence level is 95%. The sample size of 267 was then distributed among the three faculties using a formula recommended by Krejcie and Morgan (1970). The sample size for each university and according to faculty selected is presented in Table 1.

$$\frac{N \times S}{TP}$$

TP

where

N = Number (population of each institution), S = Sample (total sample size) and TP = Population

Based on this formula, the distribution of samples across the two selected universities will be:

1. University of Ibadan: $\frac{502}{732} \times 267 = 183$
2. Covenant University (CU): $\frac{230}{732} \times 267 = 84$

The distribution of the sample sizes between the two universities is calculated as follows:

$$\frac{N \times S}{TP}$$

TP

where

N = Number (Population of each institution)

S = Sample (total sample size)

TP = Population

Using this formula, the distribution of samples across the two selected universities was:

University of Ibadan (UI):

Faculty of Science: $\frac{225}{502} \times 183 = 82$

Faculty of Arts: $\frac{177}{502} \times 183 = 65$

Faculty of Technology: $\frac{100}{502} \times 183 = 36$

Covenant University (CU):

School of Natural and Applied Sciences: $\frac{116}{230} \times 84 = 42$

School of Leadership Development: $\frac{17}{230} \times 84 = 7$

School of Engineering and Technology: $\frac{97 \times 84}{230} = 35$

Table 4.1: Sample Sizes for Each Institution (N=215)

Faculty/School	University of Ibadan		Covenant University	
	Total no of Academics	Sample size	Total no of Academics	Sample size
Science/ Natural & Applied Sciences	225	83	116	42
Arts/ Leadership Devpt.	177	66	17	7
Technology/ Engineering & Technology	100	37	97	35

This study used a probability sampling technique to select the sample (respondents) for this study. The strategy for selecting the sample for the study from each institution from the selected faculty was systematic sampling technique. Systematic sampling involves selecting elements at equal intervals, such as fifth (5th), eight (8th) or twentieth (20th) element from a list of the total population. That is arranged in a specific order. Sample units of n elements from a population of N elements will be drawn by dividing the N elements in the population into n groups of k elements and then randomly selecting the first element out of the first k elements in the population and then every kth unit afterward until a sample of n element is reached as shown in Table 2.

Where:

- n = Sample size for the faculty
- N = Total number of academics in each Faculty
- K element = Sampling interval
- K unit = Sample unit

Table 4.2: Sampling Procedure (N=215)

Faculty/School	University of Ibadan				Covenant University			
	No of academics (N)	Sample size (n)	Sampling interval (N/n)	Sample unit	No of academics (N)	Sample size (n)	Sampling interval (N/n)	Sample unit
Science/ Applied & Natural Sc.	225	83	3	1 st , 4 th , 7 th	116	42	3	1 st , 4 th , 7 th
Arts/ Leadership Devpt	177	66	3	1 st , 4 th , 7 th	17	7	3	1 st , 4 th , 7 th
Technology/ Engineering and Tech	100	37	3	1 st , 4 th , 7 th	97	35	3	1 st , 4 th , 7 th

4.7 Data Collection Techniques

Data in research can be collected using four main techniques: questionnaire, interview, observation and examination of documented records (Onyango, 2002). The administration of research instruments or tools of data collection on the respondents is described as data collection (Bhandarkar and Wilkinson, 2010). The study utilised structured questionnaire and interview (semi structured) schedule in capturing views, opinions, and responses from participants.

Questionnaire describes all methods of data collection in which individuals respond to the same set of questions in a predetermined manner (deVaus, 2002). According to Saunders et al. (2012), the design of a questionnaire usually depends on how it will be delivered, returned and collected. There are two types of questionnaire: self completed questionnaires, which are usually completed by the respondents, and interviewer completed questionnaires (Saunders et al., 2012). Questionnaires can be sent electronically (web based), by post (mail questionnaire) or delivered by hand to each respondent (Saunders et al., 2012).

Questionnaires can also be open ended or closed ended in nature. The open ended questionnaire allows researchers to give answers in their own way (Fink, 2009) while the closed ended questionnaire provides a list of multiple answers for respondents to choose from (Saunders et al., 2012). Due to the nature of job of the respondents for this present study, the closed ended questionnaire was chosen as minimal writing is required (Saunders et al., 2012) and respondents are able to answer questions quickly and easily. Moreover, questionnaires are usually inexpensive to administer; very little training is needed to develop them, and they can be analysed easily and quickly once completed (Birmingham and Wilkinson, 2003:8).

The questionnaire included structured questions, which were closed-ended in nature and derived from standardised instruments to measure the variables in the study. Self administered questionnaires were designed in a way that the researcher could collect data on the demographics of the respondents, types of electronic instructional media adopted and used in teaching, extent of adoption, purpose of use different types of electronic instructional media, behavioural intention, trialability, factors influencing technology adoption and use (drawn from UTAUT and DOI constructs), media literacy skills and challenges faced in the adoption and use of electronic instructional media.

Interview is a purposeful conversation (Saunders, Lewis and Thornhill, 2012) between the researcher and the participants in a study. Interviews can be classified as structured, semi structured or unstructured. In a situation where the interview is formalised and the respondents hear the questions in the same manner, it is referred to as structured interview. The authors caution that the researcher should ask concise and unambiguous questions but the questions must be consistent with the research questions.

A semi structured interview was used to collect qualitative data for the study. The semi-structured interview technique is described as standardised open-ended interview (Patton, 1990) where questions are prepared beforehand (Berg, 1998). The semi structured interview allows the researcher to obtain responses from participant(s) either through face to face encounter, telephone or by using the internet. Interviews have been described as the most direct method of obtaining facts from respondents. The benefits of using interviews in research lies in the fact that they are useful in ascertaining values, preferences, interests, task, attitudes, belief and experience. The purpose of the interview schedule was to gather open-ended information (Creswell and Plano Clark, 2007; Creswell, 2009; Creswell and Zhang, 2009) from some of the management staff in the university with a view to complement the quantitative method and have a better understanding of the problem (Creswell and Plano Clark, 2007:7). Overall, data collection involving both quantitative data and qualitative data allows for deductive and inductive investigation in the same research study to investigate, predict, explore, describe and understand the phenomenon (Mingers, 2001; Sale, Lohfeld, and Brazil, 2002; Tashakkori and Teddlie, 2003; Creswell, 2003; Johnson and Onwuegbuzie, 2004).

Some top university management staff (deans of the selected faculty, the university librarian and director, centre for information technology) were purposively selected to participate in a semi structured interview. This is because they are actively involved in strategic planning, management, and acquisition of electronic instructional media, budgeting and policy development.

4.8 Survey Questionnaires

This section provides detailed information about the survey instruments that were used in the study. Creswell (2003) recommends some of the factors the researcher should consider when providing detailed information about the instrument. According to Creswell, the researcher should state whether the instrument was developed by self, modified or developed from components of several instruments. According to Saunders, Lewis and Thornhill (2012), in designing questionnaire, three approaches could be followed: adopting questions used in previous studies, adapting questions used in other related studies and developing own questions. The survey instrument for the study was adapted from other researchers. The questions were then re-designed and re-worded in relation to the research questions of the study. The researcher decided to adapt questionnaires because “adapting questions used in other questionnaires is more efficient” (Saunders et al., 2012:431). Therefore, statements on the UTAUT constructs such as Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC) were developed from the original questionnaire items developed by Venkatesh et al. (2003); Moore and Benbasat (1991); Birch (2009); Akbar (2013), with minor syntax changes to fit the context in which the study was carried out. Questionnaire items on DOI (Compatibility, trialability, observability) were developed from studies such as Ntemana and Olatokun (2012); Usluel, Aşkar and Baş 2008). Other items in the questionnaire were adapted from Mushi (2010) and Agbo (2015).

The reliability test results of Birch (2009) yielded Cronbach alpha value of 0.69 and 0.86 respectively for performance expectancy and effort expectancy; 0.87 for behavioural intention, 0.63 for social influence and 0.72 for facilitating conditions. Akbar (2013) recorded the following construct reliability values: 0.83 for performance expectancy; 0.87 for effort expectancy; 0.76 for social influence and 0.16 for facilitating conditions. The instrument used by Ntemana and Olatokun (2012), the internal consistency and reliability of the multiple item scales returned cronbach alpha values of 0.81 for compatibility, 0.92 for observability and 0.74 for trialability. Usluel, Aşkar and Baş (2008) found Cronbach alpha value of 0.81 for compatibility, 0.74 for observability and 0.81 for trialability.

The researcher considered questionnaire a suitable instrument for data collection because previous studies on technology adoption and use had used questionnaire (Ntemana and Olatokun 2012; Birch, 2009; Moore and Benbasat, 1991). Items of the questionnaire were

closed-ended in nature due to limited time on the part of the respondents to complete unstructured questionnaire, ensure standardisation, easy coding of data and data analysis. The questionnaire sought information from academics based on the following major constructs: performance expectancy, effort expectancy, social influence, facilitating conditions, trialability, observability, media literacy skills, behavioural intention and challenges to the use of electronic instructional media. The items in the questionnaire were rated based on a 5 point Likert scale, which are “1= Strongly Disagree, 2 = Disagree; 3 = Neutral, 4 = Agree and 5 = Strongly Agree”. Previous studies on technology adoption and use that have used a 5 point Likert scale include Mtebe and Raisamo (2014), Fidani and Idrizi (2012). The questionnaire had seven (7) preliminary items and 15 main items. The questionnaire was made up of sections A to F). Section A had preliminary items A1 - A7 (see Appendix 1) sought demographic information (such as age, gender, designation, Faculty, highest academic qualification and teaching experience) of the respondents. Section B to F had 14 main items based on the constructs in this study as types of electronic instructional media, extent of adoption and use of electronic instructional media, frequency of use of electronic instructional media, purpose of use of each type of instructional media, performance expectancy, effort expectancy, social influence, facilitating conditions, compatibility, trialability, observability, behavioural intention, media literacy skills and challenges of adoption and use of electronic instructional media among academics.

The study also involved the use of a semi structured interview which is described as researcher administered questionnaire (Pickard, 2007) to gather unstructured data from 11 management officers of the university. The interview questions (See Appendix 2) sought information on the following aspects to complement items in the questionnaire:

- extent of adoption of electronic instructional media
- factors influencing adoption and use of electronic instructional media by academics
- facilitating conditions available to support use of electronic instructional media
- challenges that are faced by academics on the use of electronic instructional media

Other questions that were addressed by the interview were:

- relative advantage of using electronic instructional media in teaching

- assessment methodologies on the use of electronic instructional media
- capacity building programmes on adoption and use of electronic instructional media
- institutional/ICT policy on adoption and use of electronic instructional media
- budgetary allocation for acquisition and installation of electronic instruction media
- role of the library in adoption and use of electronic instructional media

The interview questions are open ended in nature and include questions such as: “*What facilitating conditions are available to support use of electronic instructional media in your institution*”?

The survey instrument was administered to academics in the Faculties of Science, Arts and Engineering/ Technology to elicit quantitative data on the extent of adoption, and factors influencing adoption and use of electronic instructional media. For the qualitative study, a semi-structured interview was administered to the seven deans in the two selected universities, the two University Librarians and two Directors of Centre for Information and Communication Technology, bringing the total number of participants to 11. This decision is supported by the proposition of Leedy and Ormrod (2005:96) for qualitative studies that “researchers should identify and select a few participants who will best enlighten them on the phenomenon under investigation”. This sample size is considered appropriate to provide information-rich cases (Holloway 1997:142).

4.9 Validity and Reliability of Instrument

In quantitative research, instrument validity is a quality criterion that indicates the degree of accuracy of a study (Polit and Beck, 2004). The different types of validity are: internal validity, external validity, construct validity and statistical conclusion validity. Before the questionnaire was administered, it was subjected to face and construct validity to correct any grammatical and construct errors and also to ensure that the instrument appropriately measured what it ought to measure.

Instrument reliability is the consistency and dependability of a research instrument in measuring a variable (Brink et al., 2012). The authors explain further that reliability “is the degree to which an instrument can be depended upon to yield consistent result if used repeatedly over time on the same person or if used by another researcher”. The reliability of an instrument is determined by a correlation measure whose value varies between 0 and 1.

The nearer the measure is to 1, the higher the reliability of the instrument (Brink, et al., 2012). To ensure the reliability of the instrument used in this study, a test-retest reliability method was adopted to determine internal consistency, reliability and overall reliability of each of the sub section or construct in the questionnaires. This was achieved by conducting a pilot test at the University of Lagos. The questionnaire and interview questions for the study were pre-tested on thirty (30) academics from Faculty of Science and 3 top university management staff respectively at the University of Lagos because they have similar characteristics with the sample population. The reliability coefficient was computed using Cronbach's alpha (α) analysis to ascertain clarity of questions, internal consistency, reliability and overall reliability of constructs in the study. Where the value of the coefficient for the construct was greater than .70 indicating acceptability, over .80 indicating good and excellent when over 0.90 were accepted. Where the value was lower than 0.70, items in the instrument were re-formulated. Thereafter, the questionnaire and interview items were then reviewed and rephrased where necessary for clarity and better assimilation of the questions by respondents before the instrument were used for data collection. The reliability coefficient for each of the construct is as revealed in Table 4.3.

Table 4.3: A Test of Reliability of the Key Constructs of the Survey Instrument

Construct	Cronbach's Alpha	Items in construct
Performance expectancy	.97	7
Effort expectancy	.80	7
Social Influence	.74	5
Facilitating conditions	.74	6
Compatibility	.80	6
Trialability	.76	5
Observability	.87	3
Behavioural intention	.88	6
Types of Electronic Instructional Media	.85	25
Extent of Adoption	.92	9
Frequency of use	.94	25
Purpose of use	.94	25
Media Literacy Skills	.72	12
Challenges of Adoption	.92	19

4.10 Data Collection Procedure

This section provides information on how the researcher delivered and administered the survey. Saunders, Lewis and Thornhill (2012) submit that after the questionnaire has been pilot tested, amended and the sample for the study has been selected, the next stage is to gain access to the sample.

A week before the commencement of the data collection, the researcher visited the two universities to establish contact with the deans of the selected faculties for this study with the letter of approval to conduct research in the institution (see Appendices 7 and 9). The approval to conduct research in the selected universities was obtained prior to the commencement of the study in response to the letter of request for permission to conduct research in the selected universities (See Appendices 6 and 8). This enabled the researcher to gain access to the respondents through the dean's office. The deans used their good offices to give necessary assistance to the researcher through departmental heads, secretaries and administrative officers. The researcher also met with the prospective interviewees to seek their consent to participate in the study and obtain a convenient time for the personal interview proper. All the respondents for the qualitative study agreed to participate in the interview.

In administering the survey instruments, participants for the quantitative study were first selected from the academic staff list obtained from the Registry of both institutions. Respondents were then contacted with the help of some of the designated officers of the deans or departmental heads and questionnaires were self administered to academics. The following ethical procedure was ensured by the researcher:

- informed content letter accompanied each questionnaire (see Appendix 4):
- participants were informed of the purpose of the study
- respondents were informed that participation in the study was voluntary
- the approval to conduct research (Appendices 7 or 9) accompanied the questionnaire depending on the respective university.

The respondents were given two weeks to return the questionnaire but some of the respondents completed and returned the questionnaire before this period. The researcher engaged two research assistants. The two research assistants were briefed on the purpose of the research, how to approach the participants, deliver the questionnaires and check that the

questionnaires were properly completed. The academics were seen individually in their offices by the researcher and the two research assistants. Moreover, to ensure a smooth data collection procedure, the research assistants were assigned to one faculty each. The researcher and the research assistants followed up on the respondents to collect the completed survey. For the qualitative study, participants gave the most appropriate time for conduct of the interview. The consent of the interviewees was sought before the commencement of the interview and before recording the conversation (See Appendix 5). The interview was hand recorded using a field notebook as back-up to the recorded conversation. The audio recorded interviews were later transcribed alongside the field notes.

The researcher encountered some challenges during the entire data collection exercise. Some of the respondents who consented to participate in the study or those who gave specific dates for collection of questionnaire declined. Some other respondents declined to take part in the survey without giving reasons right from the commencement of the data collection. Some others withdrew voluntarily and thus did not complete the survey. For the qualitative study, some of the interviewees had very busy schedules and the researcher had to repeat visits before the interview was conducted.

4.11 Data Analysis

Data analysis is about making meaning out of the data collected and interpretation of meaning of data (Creswell, 2009:183). The data collected from the quantitative study were sorted, coded and analysed using Statistical Package Software for Social Sciences (SPSS version 21) to generate descriptive statistics such as the mean, standard deviation, frequency count, percentages to report the demographic characteristics and survey responses. For inferential statistical analysis, ANOVA and Multiple Regression analysis was chosen for this present study. SPSS was chosen because it is suitable for analysing data in the social sciences and also allows for easy manipulation of statistical data (Landau and Brain, 2004). The descriptive and inferential statistical analyses were chosen because these two statistical methods are used by positivist researchers (Moses and Knutsen, 2012). For the researcher to simplify and summarise the dataset in a clear, sensible and understandable way, as suggested by Jaggi (2003), descriptive statistical analysis was conducted to develop numeric and graphic procedures. The present study looked at the set of data in three dimensions:

distribution, central tendency and dispersion. For the researcher to draw conclusion from the data sets, data was analysed using inferential statistics.

The justification for the use of descriptive statistics lies in its ability to provide information about central tendency, distribution, skewness, and kurtosis of data. The inferential statistics allows a researcher to determine the relationships between variables. Inferential statistics also allow the researcher to draw conclusions or make predictions about the properties of a population based on information obtained from the study sample. According to Moses and Knutsen (2012), inferential statistics is suitable for determining the predictive capabilities of the variables of interest and the relationships between the independent and dependent variables under consideration; test hypotheses and provide explanations. In line with this submission, this present study chose the regression analysis as the statistical tool for inferential data analysis. Where the relationship or effect between independent variables and dependent variable is to be determined, regression analysis is a suitable statistical tool for such purpose. Regression is also found suitable in assessing the relative impact of each independent variable on the dependent variable. The use of regression as a statistical tool is most appropriate when both the independent and dependent variables are interval data.

Multiple regression was chosen because the researcher is interested in predicting the value of the dependent variable based on more than two independent variables (Campbell and Campell, 2008). Like correlation, regression analysis assumes that the relationship between variables is linear. According to Texas State Auditor's Office (n.d), correlation is used to measure the similarity in the changes of values of interval variables but is not influenced by the units of measure. Another advantage of correlation is that it is always bounded by the interval $-1 \leq r \leq 1$ (where -1 depict a perfect inverse linear relationship, i.e. y increases uniformly as x decreases, while the value 1 indicates a perfect direct linear relationship, i.e. x and y move uniformly together. A value of 0 indicates no relationship). The data analysis strategy used to analyse each research questions in this study is presented in Table 4.4.

At the end of the survey, the questionnaires were collated, sorted and checked to ensure that instructions were properly followed by respondents, legibility, and that responses were clearly provided. The problems of reliability, measurement and sources of error behind the tests were dealt with based on the following assumptions:

1. the variables in this present study follow a normal distribution, meaning that the research data is coming from a normal population depicted by a bell shaped curve.
2. a linear (straight line) relationship exists between the independent and the dependent variables.
3. The confidence level interval for the study was set at 0.05 to ensure a truly unbiased and representative sample of the study population.

The construct under investigation (adoption and use) was conceptualised as the actual use of electronic instructional media and the initiatives taken by academics to integrate electronic instructional media in teaching and learning. The independent constructs (performance expectancy, effort expectancy, social influence, facilitating conditions, compatibility, observability, trialability and media literacy) were conceptualised thus: Performance expectancy: is the degree to which an individual believes that using the system will help him/her to attain gains in job performance” (Venkatesh et al., 2003). Effort expectancy is the ease associated with using a system (Venkatesh et al., 2003). Social influence is the degree to which an individual perceives that others believe that he/she should use the new system” (Venkatesh et al., 2003). Facilitating conditions construct refers to availability of technological and organisational resources (Venkatesh, Davis and Morris, 2007). Compatibility is defined as the perception that a particular innovation is similar and congruent with existing understanding of similar or past ideas (Rogers, 1995). Observability refers to the degree to which the results of an innovation are visible to others” (Rogers, 2003). Trialability signifies the process in which academics examine and analyse the technology, with a view to know how to operate and use it (Surry and Gustafson, 1994). The media literacy construct was conceptualised as a measure of an individual’s ability to use digital resources (Beetham, 2010).

The adoption and use variable was operationalised and measured by these parameters: types of electronic instructional media adopted, extent of adoption and use, frequency of use, purpose of use, behavioural intention and trialability. Media literacy was operationalised as competence in using different types of electronic instructional media; use the internet; use Boolean terms to locate information from the Internet; identify electronic resources appropriate to prepare lecture notes; download files from the internet, upload files on the internet; save files from a web page; send attachments via e-mail; use Web 2.0

tools/technologies; design course content in electronic format; communicate with students effectively using electronic media; and partake in online discussion. The qualitative data was analysed using NVivo10. The researcher read through the interview transcripts and coded the data based on thematic content developed from the research questions and responses. NVivo is capable of managing data and ideas, querying data, modeling visually and producing reports (Hilal and Alabri, 2013).

Table 4.4: Data Sources and Data Analysis Strategies

	Research Questions	Approach	Data Sources	Data Analysis strategy used
1	What is the extent of adoption and use of electronic instructional media in selected Nigerian universities?	Quantitative & Qualitative	Survey questionnaire & Interview	Descriptive statistics: frequency counts, percentage, mean, standard deviation NVivo 10
2	What factors influence adoption and use of electronic instructional media?	Quantitative & Qualitative	Survey questionnaire & Interview	Inferential statistics (Regression Analysis) /NVivo 10
3	How do media literacy skills influence adoption and use of electronic instructional media?	Quantitative	Survey questionnaire	Inferential statistics (Regression Analysis)
4	What is the moderating effect of gender, age and teaching experience on adoption and use of electronic instructional media?	Quantitative	Survey questionnaire	Inferential statistics (Regression Analysis)
5	What challenges are faced in the adoption and use of electronic instructional media by academics in selected Nigerian universities?	Quantitative & Qualitative	Survey questionnaire & Interview	Descriptive statistics frequency counts, percentage, mean, standard deviation & NVivo 10

4.12 Ethical Issues

The term ethics is derived from the Greek word *ethos*, meaning “character” or the moral distinction between right and wrong. Situating the word ethics in research, Saunders, Lewis and Thornhill (2012:226) define ethics as “standards of behaviour that guide the researcher’s conduct in relation to the rights of those who become the subject of the work, or are affected by it. Many other scholars have emphasised the importance of ethics in social science research (Bhattacharjee, 2012; Welman, Kruger and Mitchell, 2005; Neuman, 2000; LaFollette, 1994a; LaFollette 1994b; Vesilind, 1995 and Steneck, 1994). For instance, scholars (Neuman, 2000; Vesilind, 1995; LaFollette, 1994a; LaFollette 1994b; Steneck, 1994) submit that the importance of ethical consideration in scholarly work is to guide against misconduct, falsifying data or deceptive practices on the part of the researcher (Howe and Moses 1999). Some of the anticipated tenets of ethical behaviour are voluntary participation, harmlessness, anonymity, confidentiality, disclosure of the purpose of the study, outcome and benefit of the study to respondents (Bhattacharjee, 2012). Moreover, post-positivist researchers respect privacy of the respondents through the use of informed consent in research (Pickard, 2007).

In conforming to ethical issues, all procedures of the University of KwaZulu-Natal (UKZN) Ethics Policy were followed. An ethical clearance certificate was obtained prior to the commencement of the data collection from the Humanities and Social Sciences Research Ethics Committee of the University of KwaZulu-Natal (see Appendix 3). Furthermore, all the participants in this present study also received the informed consent form (see Appendices 4 and 5), through which they were informed about the purpose and importance of the study (see Appendices 4 and 5) and that participation is voluntary. Respondents were also assured of anonymity and confidentiality of the information given. Permission was sought from individuals in authority to access academics in the selected universities. Approval was obtained from the Deputy Vice Chancellor (Academics), University of Ibadan (see Appendix 7) and the Registrar, Covenant University (see Appendix 9).

4.13 Summary

This chapter discussed the methodology adopted for the study. The underlying assumption for the study was the post-positivist paradigm that was based on a mixed method approach, which combined both quantitative and qualitative methods to obtain data. A survey research design was adopted for the study. The population of the study was 732 academics from two universities. A sample size of 267 academics was considered appropriate for the study from a published table for selecting sample sizes by Israel (1992) at $\pm 5\%$, precision level where confidence level is 95%. Prior to data collection, the reliability of the instrument was determined using cronbach alpha. Respondents for the survey were chosen using systematic random sampling technique but respondents for the qualitative study were chosen through the census method. Data were collected by survey for the quantitative study while semi structured interview was used as the data collection technique for the qualitative study. Data obtained from the survey was analysed using both descriptive and inferential statistics. Data from the qualitative study was coded and analysed with the help of the NVivo software. All ethical regulations by UKZN were duly observed.

CHAPTER FIVE

DATA ANALYSIS AND PRESENTATION OF FINDINGS

5.1 Introduction

This chapter focuses on analysis of data and presentation of findings on the adoption and use of electronic instructional media among academics in selected universities in Nigeria. The purpose of data analysis is to help the researcher answer the research questions as well as verify the interaction among variables. Bhattacharjee (2012:23) avers that “data is analysed and interpreted for the purpose of drawing conclusions regarding the research questions of interest”. Data analysis requires that the researcher breaks down data into different component parts to obtain answers to research questions and to test research hypotheses (De Vos, Fouché and Venter, 2002). The analysis of research data, however, does not in itself provide answers to research questions. Data analysis may be quantitative (e.g., use of statistical techniques such as regression or structural equation modeling) or qualitative e.g., coding or content analysis (Bhattacharjee, 2012)

The study sought to investigate the extent of adoption and use of electronic instructional media and factors influencing adoption and use of electronic instructional media among academics in selected Nigerian universities. The study addressed the following research questions: What is the extent of adoption and use of electronic instructional media in selected Nigerian universities? What factors influence adoption and use of electronic instructional media? How do media literacy skills influence adoption and use of electronic instructional media? What is the moderating effect of gender, age and teaching experience on adoption and use of electronic instructional media? What challenges are faced in the adoption and use of electronic instructional media by academics in selected Nigerian universities?

Both quantitative and qualitative data were gathered for this study. Quantitative data were gathered through survey questionnaire while qualitative data were collected through interviews. Data collected through questionnaire were coded and analysed using descriptive statistics and the Statistical Package for Social Sciences (SPSS version 21). Both descriptive and inferential statistics were used to present the findings as recommended by Katz (2006) using such tools as frequency tables, and figures. Qualitative data collected through interviews were prepared first by transcribing them verbatim using audio-tape into word-

processed text. Thereafter, a thematic content analysis of the qualitative data was done with the help of the NVivo 10 software. With the help of the NVivo 10 software, the researcher was able to manage, sort and organise the qualitative data, locate words, phrases and segments of data so as to prepare diagrams and extract quotes (Burnard, Gill, Stewart, Treasure and Chadwick, 2008) from the interview responses. The profile of the respondents who were reached for the interview is presented in Table 5.2b. The rest of this chapter is organised using the research questions as the framework.

5.2 Response Rate

Response rate is used as “a common metric for evaluating survey quality under the premise that a higher response rate will produce findings that are more representative of the population of interest” (Johnson and Wislar, 2012:1805). Response rate is often described as the proportion of people who return the survey questionnaire. It is calculated by dividing the number of the returned questionnaire by the total number of questionnaire distributed. The threshold of an acceptable response rate as a measure of survey quality is put at 60 % (Johnson and Wislar, 2012:1805).

Out of the 267 questionnaires administered to academics in the two universities, 215 were completed and returned, giving a response rate of 80.5%. Table 5.1 presents the actual number of copies of the questionnaires given out to each of the universities and the number returned. For the qualitative study, out of the eleven respondents who were to take part in the semi structured interview, ten were interviewed, giving a response rate of 90.9%. The researcher was able to reach all the interviewees except one who was unable to grant the interview due to his tight schedule. The two response rates of 80.5% (questionnaire) and 90.9% (interview) respectively were considered sufficient in being representative of the entire population of interest (Johnson and Wislar, 2012).

The high response rate was as a result of the support obtained from the deans, head of departments, and some administrative officers in the selected faculties. The questionnaire was also accompanied by a copy of the approval letter to conduct the study in the selected universities. The survey period had to be extended from 10 weeks to 14 weeks, particularly at the University of Ibadan because of the busy schedule of the academics at the time of the data

collection, to enable many of the academics to partake in the study. The researcher with two research assistants had to personally follow up on the academics.

Table 5.1: Response Rate from the Survey (N = 215)

University	No of copies of Questionnaire Administered	No of copies of Questionnaire returned	Response rate (%)
University of Ibadan	183	131	71.6
Covenant University	84	84	100.0
Total	267	215	80.5

(Source: Researcher's survey data output, 2015)

5.3 Demographic Profile of Respondents

This section presents the demographic information of the respondents such as faculty, gender, age, highest academic qualification among others as shown in Table 5.2a below

Table 5.2a: Demographic Profile of Respondents (N = 215)

Demographic Profile	Category	Frequency	Percent (%)
Faculty	Arts/ School of Leadership	40	18.6
	Technology/Engineering	72	33.5
	Science/ Natural and Applied Science	103	47.9
Gender	Male	157	73.0
	Female	58	27.0
Age (in years)	25 – 35	39	18.1
	36 – 46	112	52.1
	47 – 57	46	21.4
	58 – 68	18	8.4
Highest Educational Qualification	M.Sc.	67	31.2
	M.A	15	7.0
	PhD	128	59.5
	Others	5	2.3
Number of years served as an academic	< a year	7	3.3
	1 - 5yrs	58	27.0
	6 - 10 yrs	70	32.6
	11 - 15yrs	36	16.7
	16 - 20 yrs	29	13.5
	20 yrs and above	15	7.0
Designation in the university	Professor	13	6.0
	Reader/ Associate Professor	20	9.3
	Senior Lecturer	42	19.5
	Lecturer I	33	15.3
	Lecturer II	59	27.4
	Assistant Lecturer	48	22.3

(Source: Researcher's survey data output, 2015)

The analysis of demographic data of the 215 respondents who actively participated in this study as shown in Table 5.2a indicates that academics in Faculty of Science accounted for about half of the respondents (47.9%) while the least number of responses (18.6%) was obtained from Arts/School of Leadership Development. A large proportion (73.0%) of the respondents are males. About 50% of the respondents are within 36 to 46 years category and less than ten percent of the respondents are between 58 to 68 years. An analysis of the educational attainment reveals that majority of academics (59.5%) have PhD degrees while less than 50% of the respondents possess master's degree. Most of the academics (32.6%) surveyed have been working for six to ten years. Further analysis of the demographic data show that majority of the respondents belong to lecturers in grade II category. The analysis

showed considerable combination across demographic variables hence data collected can be regarded as reliable for the purpose of this study.

The profile of the respondents for the semi structured interview is presented in Table 5.2b.

Table 5.2b: Profile of Interviewees (N = 10)

S/N	Institution	Profile	Gender
1	University of Ibadan (Public)	Dean, Faculty of Arts	Male
2		Dean, Faculty of Science	Male
3		Dean, Faculty of Technology	Male
4		University Librarian	Male
5		Director, MIS	Male
6	Covenant university (Private)	Deputy Dean, SLDV	Male
7		Deputy Dean, SCPE	Male
8		Deputy Dean, SAEG	Male
S/N	Institution	Profile	Gender
9	Covenant university (Private)	Director, CLR	Male
10		Director, CSIS	Male

(Source: Researcher's survey data output, 2015)

Key: SLDV= School of Leadership Development; SCPE= School of Chemical and Petroleum Engineering; SAEG= School of Applied Engineering; CLR: Center for Learning Resources; CSIS: Center for Systems and Information Services, MIS: Management Information Systems

5.4 Data Analysis based on Research Questions

This section presents the results of the survey based on the research questions that were investigated. These are extent of adoption, factors influencing adoption and use of electronic instructional media, influence of media literacy skills on adoption and use of electronic instructional media and challenges of adoption and use of electronic instructional media by academics in Nigerian universities. The result is presented in Tables 5.3 to 5.30.

5.4.1 Extent of Adoption and use of Electronic Instructional Media among Academics in Nigerian Universities

Research question one sought to ascertain the extent of adoption and use of electronic instructional media in selected Nigerian universities. The construct under investigation (adoption and use) was conceptualised as the actual use of electronic instructional media and the initiatives taken by academics to integrate electronic instructional media in teaching and learning. The adoption and use variable was measured by these parameters: types of electronic instructional media adopted, extent of adoption and use, frequency of use, purpose

of use, behavioural intention and trialability. The analysis of the results is presented in sections 5.4.1.1 to 5.4.1.5.

5.4.1.1 Types of Electronic Instructional Media Adopted by Academics in Nigerian Universities

The section presents the findings on the types of electronic instructional media that had been adopted by academics in Nigerian university. The analysis of findings revealed the types of hardware, software, electronic resources and social networking sites that academics have adopted for the purpose of teaching. The results in Figure 5.1a to 5.1d show the types of electronic instructional media that were adopted by academics for teaching purposes in universities. These electronic instructional media types are divided into four: hardware, software, e-resources and social networking sites.

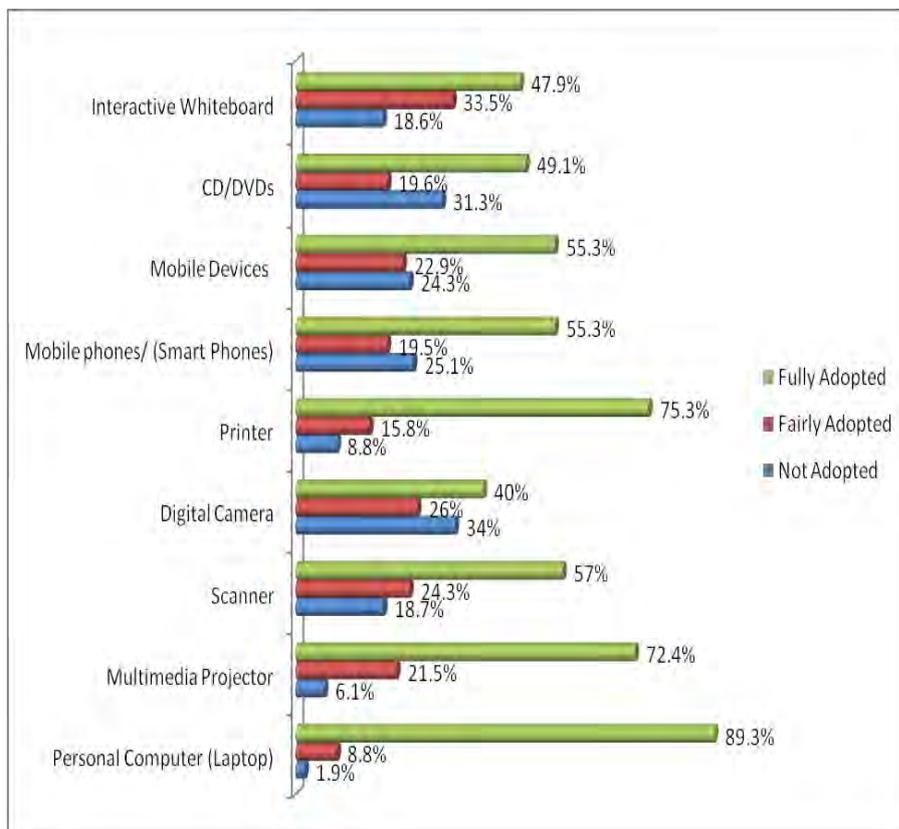


Figure 5.1a: Types of Electronic Instructional Media (Hardware) Adopted by Academics in Nigerian Universities (N=215) (Source: Researcher’s survey data output, 2015)

Data was obtained from the respondents on the types of electronic instructional media adopted in teaching. From the hardware category, majority of the respondents (89.3%) reported that they had adopted personal computer. Nearly 80% of the respondents indicated

that they had adopted the printer and multimedia projector respectively. Moreover, only about half of the respondents surveyed had adopted mobile devices and mobile phones in teaching. The least adopted electronic instructional media among the hardware type was digital camera.

When the respondents were asked to indicate the types of electronic instructional media (software) adopted for teaching purposes, findings reveal that the most fully adopted software was Word Processing (Microsoft Word), followed by presentation software (PowerPoint) and Spreadsheets (Excel) as shown in Figure 5.1b.

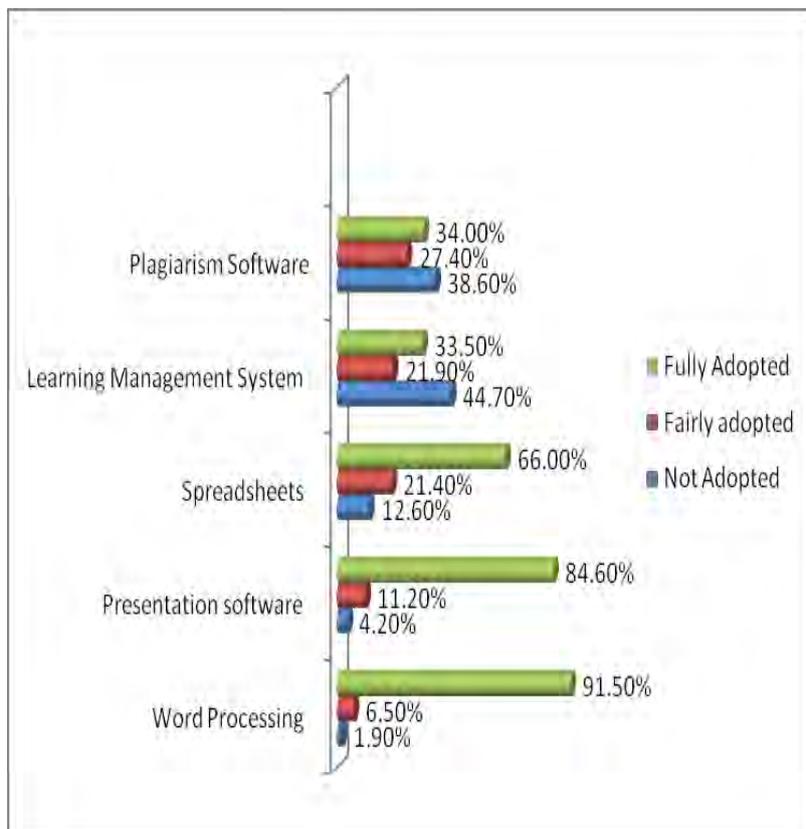


Figure 5.1b: Types of Electronic Instructional Media (Software) Adopted by Academics in Nigerian Universities (N=215) (Source: Researcher’s survey data output, 2015)

The number of responses obtained from academics on adoption of LMS and Plagiarism software was fewer than what was obtained for other types of software indicated in the questionnaire. The result suggests that far less than half of the respondents had fully adopted Learning Management System (LMS) and plagiarism software for teaching purposes.

The results in Figure 5.1c show the types of electronic instructional media (e-resources) that were adopted by academics for teaching purposes in universities. Respondents were asked to indicate the types of electronic resources they had adopted in teaching.

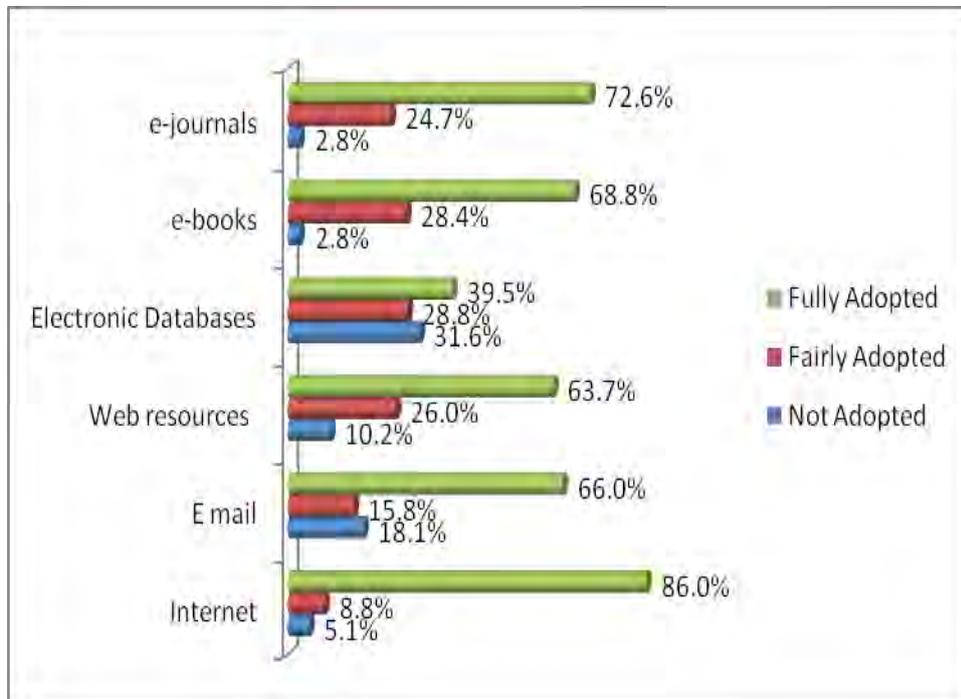


Figure 5.1c: Types of Electronic Instructional Media (e-resources) Adopted by Academics in Nigerian Universities (N=215) (Source: Researcher’s survey data output, 2015)

Among the electronic resources, analysis of findings shows that internet, e-journals, e-books, e-mail and web resources, in that order, were the electronic resources fully adopted by academics in teaching. However, the result shows that electronic databases were the least adopted among academics in teaching.

The results in Figure 5.1d show the types of electronic instructional media (social networking sites) that were adopted by academics for teaching purposes in universities.

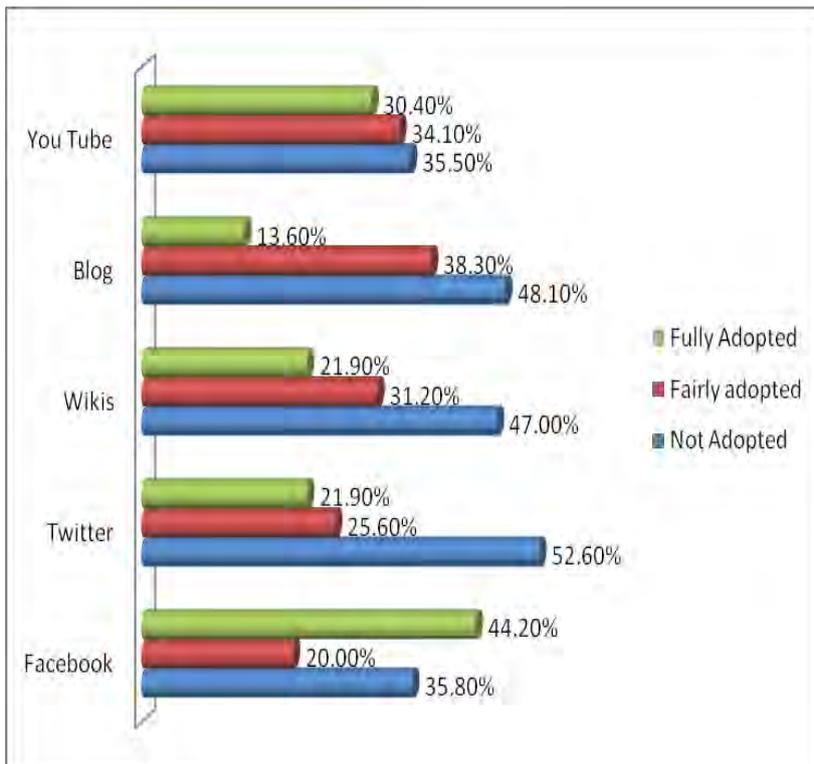


Figure 5.1d: Types of Electronic Instructional Media (Social Networking Sites) Adopted by Academics in Nigerian Universities (N=215) (Source: Researcher’s survey data output, 2015)

The results in Figure 5.1d show that a majority of academics (44.2%) had fully adopted Facebook for teaching purposes while a minority (13.6%) had fully adopted Blog in their teaching endeavours. Overall, the result in Figure 5.1d is an indication that adoption of social networking sites in teaching is not well pronounced among academics in Nigerian universities.

5.4.1.2 Extent of Adoption and Use of Electronic Instructional Media by Academics

Table 5.3 shows the items used in measuring the extent of adoption of electronic instructional media for teaching and learning purposes among academics in Nigerian universities. The table shows the mean score and ranking of the attributes that measured the extent of adoption and use of electronic instructional media among academics using a 5 point likert scale. Based on a five point likert scale, the minimum expected mean is 1 while the maximum expected mean is 5.

Table 5.3: Extent of Adoption and Use of Electronic Instructional Media by Academics (N = 215)

Statement	N	Min	Max	Mean	Std. Dev	Rank
I have made changes to accommodate electronic instructional media in my lectures	215	1	5	4.31	.815	1
I regularly pursue innovative ways to incorporate electronic instructional media into my lectures	215	1	5	4.26	.824	2
I give my students course materials in electronic format	215	1	5	4.17	.973	3
I recommend and direct my students to reading list in databases, internet and e books	215	1	5	4.01	.881	4
I have created e mail accounts for my students to communicate with me and other members of the class	215	1	5	3.11	1.292	7
I have created online groups for my students so as to facilitate teaching, delivery of course content and a platform for intellectual discussion among my students	215	1	5	2.98	1.180	9
I design my courses in such a way that my students can use electronic instructional media for their own individual learning/study	215	1	5	3.90	1.045	5
I incorporate electronic instructional media in my teaching to such an extent that it has become a standard learning tools for my students	215	1	5	3.72	1.135	6
I incorporate electronic instructional media in my teaching to such an extent that my students can collaborate with other students in my class or outside lecture room for a mastery of the course	215	1	5	3.38	1.158	8

(Source: Researcher's survey data output, 2015)

Table 5.3 shows that all the attributes measured are significant with the exception of one of the attributes which had a mean value below 3. It could then be said that the attributes with

mean score over 3 demonstrate the extent of adoption and use of electronic instructional media among academics. The top rated item in Table 5.3 was “I have made changes to accommodate electronic instructional media in my lectures”, where majority of academics ($\bar{x} = 4.31$) strongly agreed/agreed with the statement. The second highly rated item was “I regularly pursue innovative ways to incorporate electronic instructional media into my lectures as well as “I give my students course materials in electronic format” where majority of academics ($\bar{x} = 4.26$) strongly agreed/agreed with the statement. The third highly rated item was “I give my students course material in electronic format” where majority of academics ($\bar{x} = 4.17$) strongly agreed/agreed with the statement.

The question on extent of adoption and use of electronic instructional media was also addressed by the interview with the deans, university librarians and the directors of the centre for Information Technology. The specific question that addressed the extent of adoption in the qualitative study was question one of the interview guide (see Appendix 2). In order to determine the extent of adoption and use of electronic instructional media in the universities surveyed, the respondents were asked during the interview to describe the extent of adoption and use of electronic instructional media and attitude of academics towards use of technology in teaching. The findings from the qualitative analysis (see Figure 5.2) indicate that the level of adoption of electronic instructional media among academics in the selected Nigerian universities was extensive, although it varies from department to department and from faculty to faculty. This result of the qualitative study corroborates that of the quantitative study which revealed that there is a high extent of adoption and use of electronic instructional media among academics.

One of the respondents commented as follows:

“I would say that generally, adoption of electronic instructional media is extensive. In this university, teaching is done using electronic instructional media”

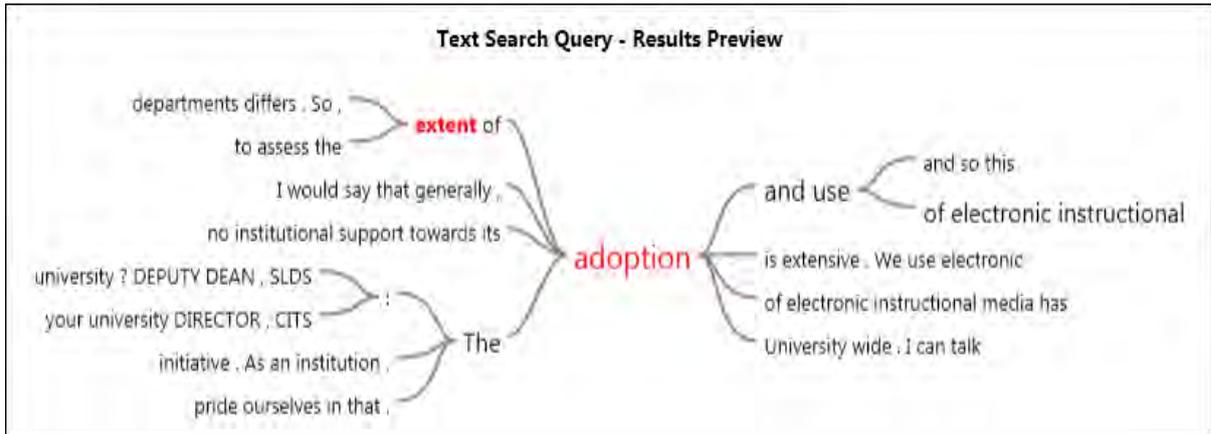


Figure 5.2: Extent of Adoption and Use of Electronic Instructional Media by Academics

Table 5.4 presents the summary of interview responses on the extent of adoption and use of electronic instructional media as obtained from the deans, university librarian and ICT directors from the two universities surveyed.

Table 5.4 Summary of Interview Responses on Extent of Adoption and Use of Electronic Instructional Media (N=10)

Respondent	Response
Respondent 1	<i>“We have gone beyond merely using it for our Postgraduate students. We have also introduced electronic instructional media in teaching our undergraduate students. Different types of electronic instructional media such as the interactive board and projectors are used. Our students submit their assignment electronically, but I can only hope for the use of these electronic instructional media in interactive and intellectual sessions.”</i>
Respondent 2	<i>“We have about 50% of academics for now and I hope this will improve drastically when the power (light) situation improves”</i>
Respondent 4	<i>“My personal observation is that some academics, particularly the young ones have imbibed the culture. But this is individual initiative”</i>
Respondent 7	<i>“Electronic instructional media is the only thing we use and we are really proud of using in this university”</i>
Respondent 9	<i>“There is a high degree of deployment of electronic instructional media in this university to do so many things, ranging from student registration, enrolment, examination, interaction with students, uploading of lectures, in fact virtually everything”</i>

(Source: Researcher’s survey data output, 2015)

5.4.1.3 Use of Electronic Instructional Media by Academics

This section sought the level of electronic instructional media usage by academics. The construct is operationalised as the frequency at which academics use electronic instructional media and for what purpose. The results are presented in Table 5.5 and Appendix 10 respectively.

Table 5.5: Frequency of use of Electronic Instructional Media (N = 215)

Electronic Instructional Media		Frequency of Use Freq (%)					Mean	Std. Dev
		Daily	Weekly	Monthly	Rarely	Never		
Hardware	Personal Computer	207 (96.3)	3 (1.4)	1 (0.5)	2 (0.9)	2 (0.9)	4.91	0.508
	Multimedia Projector	62 (28.8)	84 (39.1)	21 (9.8)	37 (17.2)	11 (5.1)	3.69	1.203
	Scanner	44 (20.5)	50 (23.3)	39 (18.1)	69 (32.1)	13 (6.0)	3.20	1.258
	Digital camera	34 (15.8)	48 (22.3)	25 (11.6)	78 (36.3)	30 (14.0)	2.90	1.332
	Printer	133 (61.9)	57 (26.5)	7 (3.3)	10 (4.7)	8 (3.7)	4.38	1.016
	Mobile Phones	155 (72.1)	9 (4.2)	8 (3.7)	19 (8.8)	24 (11.2)	4.17	1.448
	Mobile Devices	126 (58.6)	23 (10.7)	14 (6.5)	22 (10.2)	30 (14.0)	3.90	1.522
	Interactive Whiteboard	64 (29.8)	56 (26.0)	14 (6.5)	52 (24.2)	29 (13.5)	3.34	1.457
Software	Microsoft Office Word	201 (93.5)	7 (3.3)	2 (0.9)	2 (0.9)	3 (1.4)	4.87	0.600
	PowerPoint	101 (47.0)	69 (32.1)	21 (9.8)	21 (9.8)	3 (1.4)	4.13	1.035
	Microsoft Office (Excel)	97 (45.1)	45 (20.9)	30 (14.0)	33 (15.3)	10 (4.7)	3.87	1.270
	Learning Mgt. System	39 (18.1)	37 (17.2)	18 (8.4)	48 (22.3)	73 (34.0)	2.63	1.535
	Plagiarism software	17 (7.9)	26 (12.1)	38 (17.7)	62 (28.8)	72 (33.5)	2.32	1.269
E-Resources	E –mail	165 (76.7)	10 (4.7)	5 (2.3)	17 (7.9)	18 (8.4)	4.33	1.325
	Web resources	110 (51.2)	55 (25.6)	19 (8.8)	24 (11.2)	7 (3.3)	4.10	1.156
	Electronic Databases	51 (23.7)	49 (22.8)	30 (14.0)	40 (18.6)	45 (20.9)	3.10	1.483
	e books	109 (50.7)	65 (30.2)	26 (12.1)	12 (5.6)	3 (1.4)	4.23	0.963
	e –journal	116 (54.0)	62 (28.8)	20 (9.3)	13 (6.0)	4 (1.9)	4.27	0.987
Social Networking Sites	Facebook	93 (43.3)	39 (18.1)	12 (5.6)	32 (14.9)	39 (18.1)	3.53	1.585
	Twitter	34 (15.8)	30 (14.0)	16 (7.4)	75 (34.9)	60 (27.9)	2.55	1.429
	Wikis	32 (14.9)	39 (18.1)	23 (10.7)	61 (28.4)	60 (27.9)	2.64	1.433

	Electronic Instructional Media	Frequency of Use Freq (%)					Mean	Std. Dev
		Daily	Weekly	Monthly	Rarely	Never		
	Blog	21 (9.8)	25 (11.8)	20 (9.3)	79 (36.7)	70 (32.6)	2.29	1.298
	You Tube	32 (14.9)	53 (24.7)	30 (14.0)	48 (22.3)	52 (24.2)	2.84	1.420

(Source: Researcher's survey data output, 2015)

Table 5.5 shows the frequency of use of electronic instructional media on the basis of attributes such as daily, weekly, monthly, rarely and never. With a mean score above 4.00, respondents showed that the following electronic instructional media: personal computer; Microsoft Office Word; Internet; e-mail; mobile phones; printer; e- journals; e-books; PowerPoint and web resources are used on a daily basis. Further analysis revealed that the following electronic instructional media were rarely used by academics: scanner; digital camera; Twitter; Blog and Wikis. Since the expected mean is 3.00, the result implies that the LMS and plagiarism software, with a mean score of 2.98 and 2.32 respectively were rarely used by academics.

The results on academics' purposes of use of electronic instructional media were presented in Appendix 10. Findings revealed that academics used personal computer, printer Microsoft Word, Internet, e-journals; e-books and web resources to prepare lecture notes. The analysis of findings shows that multimedia projector and Power point are used for presentation of lectures. Academics also indicated that printer, digital camera and LMS (MOODLE) are used to produce assignments/course manual and interactive teaching. Spreadsheets such as Microsoft Excel are used by academics for data analysis and processing students' results. Further analysis of the data showed that few academics (33.0%) indicated that they use plagiarism software such as Turn-it-in for checking similarity of text among students. Moreover, the respondents also indicated as shown in Appendix 10 that mobile phones, e mail, MOODLE and Twitter are used for communication purposes with students and colleagues. Additionally, very few academics allow students to submit research essays, thesis, term papers and assignments via e-mail.

5.4.1.4 Behavioural Intention of Academics towards Adoption and Use of Electronic Instructional Media

The results presented in Table 5.6 show the behavioural intention of academics towards adoption and use of electronic instructional media in their teaching endeavours. Behavioural intention (BI) refers to the willingness of academics towards use or non-use of electronic instructional media (Davis, 1989). It is operationalised in this study as academics' willingness to use electronic instructional media on a regular basis; intention to use electronic instructional media more frequently; intention to recommend other academics to use electronic instructional media; intention to use electronic instructional media more in future because of the benefits; intention to use electronic instructional media because of its appropriateness in teaching; and intention to keep using electronic instructional media based on observation. Table 5.6, therefore, presents the descriptive statistics showing participants rating of their intention to use electronic instructional media in teaching.

Table 5.6: Behavioural Intention of Academics towards Adoption and Use of Electronic Instructional Media (N = 215)

Statement	N	Min.	Max.	Mean	Std. Dev.
I will use electronic instructional media for teaching my students on a regular basis	215	1	5	4.18	1.009
I will use electronic instructional media for my teaching at present more frequently	215	1	5	4.11	1.044
I will strongly recommend other academics to use electronic instructional media for their teaching purposes	215	1	5	4.27	.939
In future, i intend to use electronic instructional media because of the benefits	215	1	5	4.23	.991
I intend to use electronic instructional media more because it is appropriate for my working style	215	1	5	4.16	1.049
I will keep using electronic instructional media based on my observation in my faculty/ department	214	1	5	4.00	1.068

(Source: Researcher's survey data output, 2015)

On a five point Likert scale, respondents rated all the items on behavioural intention well above four points with the least mean score being 4.00 and the highest mean score being 4.27. With a mean score of 4.27, respondents accentuate willingness to recommend the use of electronic instructional media to other academics for teaching purposes.

Similarly, the analysis of the interviews (see Figure 5.3) showed that academics have positive attitude towards the use of electronic instructional media.

One of the respondents had this to say:

“... academics here from my own personal observation, have a positive attitude towards adoption and use of electronic instructional media. I can emphatically say this because from the meeting we held recently (a meeting with the VC and academics), you can see that academics are interested in adopting and using electronic instructional media for teaching”

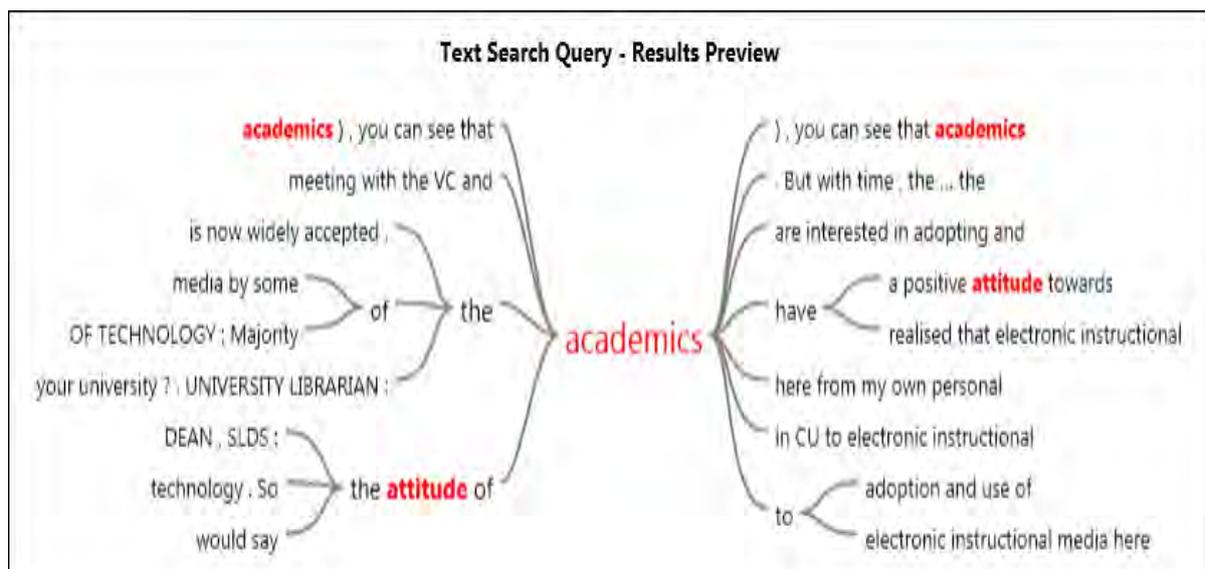


Figure 5.3: Attitude of Academics towards Use of Electronic Instructional Media in Teaching

Table 5.7 presents a summary of the interview responses on the attitude of academics towards adoption and use of electronic instructional media. Some of the respondents indicate that the younger academics are more enthusiastic to use electronic instructional media in teaching.

Table 5.7: Summary of Interview Responses on Attitude of Academics towards Use of Electronic Instructional Media in Teaching (N=10)

Respondents	Responses
Respondent 1	<i>“I would say the younger academics are more attuned to the use electronic instructional media than the older ones”</i>
Respondent 3	<i>“Majority of the academics have positive attitude towards it, while those with negative attitude will change with time when it becomes compulsory”</i>
Respondent 5	<i>“Very few older ones are embracing electronic instructional media in teaching. But much more, the younger ones have no choice, but to embrace</i>
Respondent 4	<i>“the attitude of academics to adoption and use of electronic instructional media is a healthy one now”</i>
Respondent 6	<i>“They have very well applauded the use of electronic instructional media, though an academic coming from another university will first find it strange, but with workshop and seminars, they get used to it and adjust to the norm here”</i>
Respondent 10	<i>“the younger ones are more eager to embrace technology. So the attitude of academics to electronic instructional media is positive”</i>

(Source: Researcher’s survey data output, 2015)

Further inquiry during the interview revealed that largely, academics attach positive values to the use of electronic instructional media in teaching. Some of the positive values as revealed in themes that emerged from the interview as shown in Table 5.8 indicate that with the use of electronic instructional media in teaching, retention among students becomes enhanced, teaching becomes enjoyable, lecture contents can be preserved, learning becomes more mobile and it allows for the use of sound, video and graphics.

One of the respondents said:

“There are so many advantages, but the most important is the ease with which the lecture is delivered to the students as compared with the traditional system of talk and chalk method”

Table 5.8: Summary of Interview Responses on Advantages of Using Electronic Instructional Media in Teaching (N=10)

Respondent	Responses
Respondent 1	<i>“It allows recurrent and possible repetition of courses and modules. Of course, retention is higher when students see visuals, multimedia such as sound, video, graphics, pictures etc and lastly, it is more enjoyable for students”</i>
Respondent 3	<i>“electronic instructional media allows for preservation of file (lecture notes), you can send e mail to your students, you can easily modify your notes by adding or delete whatever you want to change”</i>
Respondent 4	<i>“It makes learning more mobile, provides immediate feedback and access to global knowledge”.</i>
Respondent 5	<i>“It makes teaching and learning enjoyable. It allows academics to utilise his lecture time well”.</i>
Respondent 6	<i>“it is more exciting to go to class because the lecture notes are already uploaded online, the students would have downloaded and read them before the class. Lecturers need not go to class with notes prepared years ago. No! we now show videos in class”</i>
Respondent 9	<i>“the quality of education is higher</i>

(Source: Researcher’s survey data output, 2015)

5.4.1.5 Trialability of Electronic Instructional Media among Academics

Trialability is the process in which academics examine and analyse instructional technology, with a view to know how to operate and use it (Surry and Gustafson, 1994). Trialiability in this study is operationalised as the ease associated with using electronic instructional media after trying them out and frequency of using it more after trying them out. Table 5.9 shows the descriptive statistics of participants' rating on trialability of electronic instructional media.

Table 5.9: Trialability of Electronic Instructional Media among Academics (N=215)

Statement	N	Min.	Max.	Mean	Std. Dev.	Rank
It is easy to use electronic instructional media, more frequently after trying them out	213	1	5	4.15	.820	1st
A trial convinced me that using electronic instructional media was better than using traditional systems of teaching	213	1	5	3.93	.993	2nd
I do not need a trial to be convinced which electronic instructional media are the best for me	214	1	5	3.37	1.237	5th
It did not take me much time to try electronic instructional media, before I finally accepted their use	213	1	5	3.86	1.050	3rd
It is better to experiment with electronic instructional media before adopting them	215	1	5	3.84	1.044	4th

(Source: Researcher's survey data output, 2015)

Table 5.9 presents participants' ranking of attributes measuring trialability of electronic instructional media. "It is easy to use electronic instructional media more frequently after trying them out" occupied the first position having a mean score of 4.15. "A trial convinced me that using electronic instructional media was better than using traditional systems of teaching" takes the 2nd position while the least ranked statement among academics was the statement "It is better to experiment with electronic instructional media before adopting them". It is important to note that the mean score shown in table 5.9 are based on a five point likert scale with 5 being the maximum obtainable score. The mean score of 3.84 to 4.15 shows that all the statements on trialability, though different in their relative strengths, albeit, all have the ability to influence respondents disposition towards adoption and use of

electronic instructional media as none had a mean score lower than 3.00, which is the expected mean value for construct measured on a five point likert scale.

5.5 Factors Influencing Adoption and Use of Electronic Instructional Media among Academics

The second research question sought to determine the factors that influence adoption and use of electronic instructional media. The factors influencing adoption and use were defined and measured using the following parameters: Performance expectancy: is the degree to which an individual believes that using the system will help him/her to attain gains in job performance” (Venkatesh et al., 2003). Effort expectancy is the ease associated with using a system (Venkatesh et al., 2003). Social influence is the degree to which an individual perceives that important others believe that he/she should use the new system” (Venkatesh et al., 2003). Facilitating conditions refers to availability of technological and organisational resources (Venkatesh, Davis and Morris, 2007). Compatibility is defined as the perception that a particular innovation is similar and congruent with existing understanding of similar or past ideas (Rogers, 1995). Observability refers to the degree to which the results of an innovation are visible to others” (Rogers, 2003). Trialability signifies the process in which academics examine and analyse the technology, with a view to know how to operate and use it (Surry and Gustafson, 1994). Behavioural intention (BI) refers to the willingness of academics towards use or non-use of electronic instructional media (Davis, 1989).

Research question two was addressed by both the survey and the interview. A summary of the stepwise regression analysis showing the relative contributions of independent variables to dependent variables is presented in Tables 5.10a to 5.10e respectively. Stepwise multiple regression includes regression models in which the choice of predictive variables is carried out by an automatic procedure (Draper and Smith, 1981) using a sequence of techniques such as F-tests, t-tests and adjusted R-square. The purpose of using stepwise multiple regression in data analysis is to determine the most influential independent variable predictor(s) of a dependent variable. Usually, stepwise multiple regression retains the variables contributing to the model and then performs a test and retest to see if the variables continue to contribute to the success of the model. Variables which are not predicting the outcome at every step are simultaneously eliminated. In other words, stepwise regression essentially does multiple regression a number of times and each time removes the weakest

correlated variable and retaining the variables that explain the outcome variable best. In effect, “this statistical procedure indicates which independent variable is the best predictor, the second best predictor, and so on” (Ntemana and Olatokun 2012:187).

The results in Tables 5.10a and 5.10b indicate a stepwise multiple regression analysis of the relationship of independent variables (performance expectancy, effort expectancy, social influence, facilitating condition, compatibility, trialability, observability, and behavioural intention) and adoption and use of electronic instructional media.

Table 5.10a: Stepwise Multiple Regression Analysis Showing Contributions of Predictors of Adoption and Use of Electronic Instructional Media (N= 215)

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	32.138	2.206		14.568	.000
	Facilitating condition	.581	.105	.356	5.555	.000
2	(Constant)	24.315	3.453		7.042	.000
	Facilitating condition	.446	.113	.273	3.960	.000
	Effort Expectancy	.404	.139	.201	2.912	.004

Note: a. Dependent Variable: Adoption and use of electronic instructional media
level of sig < 0 .05

The analysis of findings revealed the standardised Beta coefficients, which give the contributions of each variable to the model while the *t* and *p* values show the impact of the independent variables on the dependent variable. The Beta values for effort expectancy ($\beta = 0.404$, $p = 0.004 < 0.05$) and facilitating condition ($\beta = 0.581$, $p = 0.000 < 0.05$) show that these attributes positively affect adoption and use of electronic instructional media.

Table 5.10b: Stepwise Multiple Regression Analysis Showing Excluded Variables from Predictors of Adoption and Use of Electronic Instructional Media (N= 215)

	Model	Beta In	T	Sig.
1	Performance Expectancy	.170 ^b	2.565	.011
	Effort Expectancy	.201 ^b	2.912	.004
	Social Influence	.195 ^b	2.620	.009
	Compatibility	-.075 ^b	-1.167	.245
	Trialability	.129 ^b	1.863	.064
	Observability	.014 ^b	.214	.831
	Behavioural intention	.193 ^b	2.869	.005
2	Performance Expectancy	.094 ^c	1.193	.234
	Social Influence	.120 ^c	1.428	.155
	Compatibility	-.054 ^c	-.856	.393
	Trialability	.007 ^c	.077	.939
	Observability	-.059 ^c	-.845	.399
	Behavioural intention	.127 ^c	1.657	.099

The results in Table 5.10c below show the prediction level of each the construct. The statistical expression R^2 shows the proportion of variability in the data set that is accounted for by the statistical model. The result shows that facilitating condition and effort expectancy were the best predictors of adoption and use of electronic instructional media for teaching purposes.

Table 5.10c: Model Summary Showing Prediction Level of the Constructs (N= 215)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.356 ^a	0.127	0.122	10.96232
2	0.400 ^b	0.160	0.152	10.77484

Note: a. Predictors: (Constant), Facilitating condition; b. Predictors: (Constant), Facilitating condition, Effort Expectancy

The results in Table 5.10d show the variables that influence adoption and use of electronic instructional media.

Table 5.10d: Predictors of Adoption and Use of Electronic Instructional Media (N= 215)

Variable	Model 1		Model 2			
	B	SE B	B	B	SE B	B
Facilitating condition	0.581	0.105	0.356*	0.446	0.113	0.273*
Effort Expectancy				0.404	0.139	0.201*
R	0.356 ^a			0.440 ^b		
R ²		0.127			0.160	
	F(1, 212) = 30.863*		F(1, 212) = 20.212 *			

Note: * $p < 0.05$

The result revealed that facilitating condition and effort expectancy $F_{(1, 212)} = 20.212$ $p < .05$ jointly accounted for 16.0% variability in adoption and use of electronic instructional media by academics for teaching purposes.

The results in Table 5.10e below show a regression analysis of the overall performance of the predictors of adoption and use of electronic instructional media. The results suggest a joint significant relationship between the strongest predictors ($F(1, 212) = 20.212$, $p < 0.05$). Since the value of p is less than 0.05 for the two variables, the model is significant.

Table 5.10e: Regression Analysis on Overall Performance of Predictors of Adoption and Use of Electronic Instructional Media (N=215)

Model	SS	Df	MS	F	Sig.
1 Regression	3708.934	1	3708.934	30.863	.000 ^b
1 Residual	25596.726	213	120.172		
1 Total	29305.660	214			
2 Regression	4693.071	2	2346.536	20.212	.000 ^c
2 Residual	24612.589	212	116.097		
2 Total	29305.660	214			

Note: a. Dependent Variable: Adoption and use of electronic instructional media; b. Predictors: (Constant), Facilitating condition; c. Predictors: (Constant), Facilitating condition, Effort Expectancy

The result above suggests that the combination of facilitating condition and effort expectancy significantly predict adoption and use of electronic instructional media.

Research question two: “*what factors influence adoption and use of electronic instructional media?*” was addressed by the qualitative approach. The specific questions from the interview guide (see Appendix 2) that provided answer to this question were items 5, 3, 10, 8, 11, 12 and 4. Question five of the interview guide states that: “*Do you think the following issues influence adoption and use of electronic instructional media by academics? Issues such as: (a) Compatibility, (b) individual belief/relative advantage, (c) ease of use of electronic instructional media, (d) social factors (e) image, (f) media literacy skills (g) technical infrastructure (h) government policy, (i) institutional policy, (j) organisational support, (k) technical support and (l) culture (etcetera)*”. Most of the respondents affirmed that infrastructure is the main determinant of electronic instructional media adoption and use. However, one of the respondents emphatically said that adoption and use of electronic instructional media in teaching by academics is influenced, not just by infrastructure, but also by the culture of the university. From the theme that emerged from the analysis of the interview, it can be said that infrastructure (see Figure 5.4) and the culture of using technology in teaching are the most important factor influencing adoption and use of electronic instructional media. One of the respondents said: “*If the infrastructure is there, those academics who do not want to use electronic instructional media in their lectures will be left behind*”.

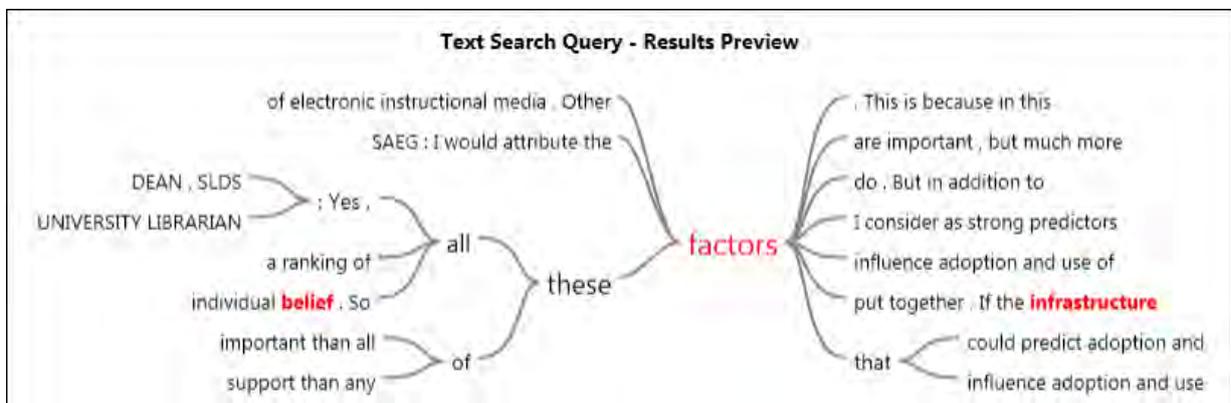


Figure 5.4: Factors Influencing Adoption and Use of Electronic Instructional Media

In the view of another respondent:

“Starting from our proprietor base, I would say that we inherited a culture of excellence, especially from our founder whose belief is that anything we do must be perfect. The use of electronic instructional media in this university is driven strongly by culture and as such, it has become an institutional

policy that the use of electronic instructional media is a must in teaching and learning

The responses of a few other respondents on factors influencing adoption and use of electronic instructional media are summarised in the Table 5.11.

Table 5.11: Summary of Interview Responses on Factors Influencing Adoption and Use of Electronic Instructional Media (N=10)

Respondent	Response
Respondent 2	<i>“of course, institutional policy is very important because if you are in an organisation, whatever your belief is, the first thing is ehm you have to abide by the university policy and regulations of the institution, after that comes individual belief”</i>
Respondent 3	<i>“it is more of infrastructural support than any of these factors put together. If the infrastructure is not made available, adoption and use cannot be possible in the first instance. If the infrastructure is there, those who do not want to use electronic instructional media will be left behind”</i>
Respondent 4	<i>“... the strongest to me is top management support. So willingness on the part of the management of the university will strongly influence adoption and use of electronic instructional media. To me, policy is of no value if not backed up with fund”</i>
Respondent 10	<i>“If I have to do a ranking of all these factors that could predict adoption and use of electronic instructional media, first is university policy, then technical infrastructure, followed by ease of use”</i>
Respondent 6	<i>“I would attribute the factors that influence adoption and use of electronic instructional media to: funding and institutional policy”.</i>

(Source: Researcher’s survey data output, 2015)

Formulation of relevant policy/strategy within the institution on the use of technology in teaching has been demonstrated as essential the world over. Therefore, question ten of the interview guide asked the question: *What policies exist in your institution on adoption and use of electronic instructional media into teaching?* Findings from the qualitative study as shown in Figure 5.5 revealed that there are policies to support adoption and use of electronic instructional media. However, some of the respondents are not aware of the ICT policy on use of technology in teaching. This could be an indication that the ICT policies are not written or that the level of awareness or dissemination of such policies is poor. One of the respondents said: “in this university, we have policies that cover delivery of bandwidth to academic staff. There is also a policy enforcing the use of smart boards and uploading of lecture notes, assignments, e –tests, etc”. Another respondent had this to say: ... “no definite policy, but the use of electronic instructional media is encouraged. There is no campus wide policy”.

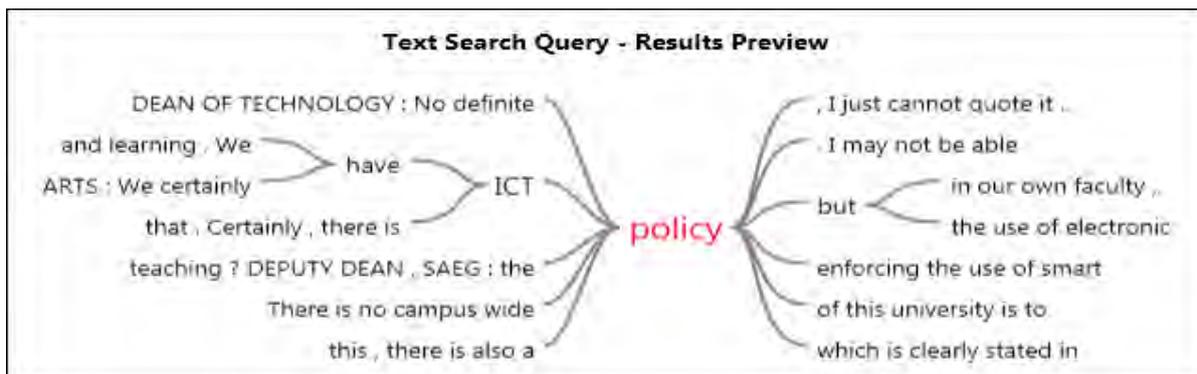


Figure 5.5: Institutional/ICT Policy on Adoption and Use of Electronic Instructional Media

The responses of a few of the respondents on institutional policy on adoption and use of electronic instructional media are summarised in Table 5.12.

Table 5.12: Summary of Interview Responses on Institutional/ICT Policy on Adoption and Use of Electronic Instructional Media

Respondent	Responses
Respondent 3	<i>“There is no campus wide policy”</i>
Respondent 6	<i>“the policy of this university is to modernise teaching and learning”</i>
Respondent 5	<i>“This is an ICT driven university and the culture here is that there is no alternative to the use of electronic instructional media in teaching and learning. We have ICT policy which is clearly stated in memos and staff handbook. No chalk in classrooms again”.</i>

(Source: Researcher’s survey data output, 2015)

As a follow up to the question on factors influencing adoption and use of electronic instructional media, respondents were asked to mention the facilitating conditions that are available within their university. The themes that emerged showed that availability of hardware, software and bandwidth for internet access on campus, power supply and training were available to facilitate adoption and use of electronic instructional media by academics. One of the interviewees declared: *“There is campus wide internet connectivity and a lot of investment is going into provision of optic fibre cable. The universities are making effort to keep improving and increasing the size of the bandwidth and supply of electricity”.*

Another respondent testified thus:

“Well, the major thing is you need adequate supply of electricity. We have found a way around the epileptic supply of electricity. Like what we are using right now in my office is the inverter. We also have a 60KV generating set. The generating set is connected to our classrooms but we are working on putting inverters in all our classrooms so as to facilitate the use of electronic instructional media”

Table 5.13 presents the summary of the responses from interviewees on conditions that are available within the university to promote adoption and use of electronic instructional media.

Table 5.13: Summary of Responses on Facilitating Conditions for Adoption and Use of Electronic Instructional Media (N=10)

Respondent	Responses
Respondent 2	<i>“there are courses organised by the ICT section of the university from time to time especially for the junior academics”</i>
Respondent 5	<i>“a good network with enough bandwidth”</i>
Respondent 4	<i>“...a group of technologists who assist in case there is a problem. This people are from ICT section and they are always around when lecture is going on. Even when they are not around, we can always call them”</i>
Respondent 8	<i>“in this university, we have electricity 24/7”</i>
Respondent 9	<i>“ICT literacy of both staff and students is very high. At the point of recruitment, ICT literacy is a compulsory requirement for academics. This also goes for our students”</i>
Respondent 10	<i>“We organise training on how to use the LMS, multimedia, projectors and the in-house podium”</i>

(Source: Researcher’s survey data output, 2015)

Still on facilitating conditions, the respondents were asked if there are capacity building programmes for academics on the use of electronic instructional media. The result of the qualitative analysis (see Figure 5.6) revealed that there are capacity building programmes in place to facilitate adoption and use of electronic instructional media. This capacity programmes include regular talks and presentations from some academics in the university. Regular training is also organised by the centre for information technology and the library. However, the training is more extensive in one faculty than the other, and also more prevalent in one of the universities than the other. Findings also revealed that the training programmes emanate more from the centre for information technology of the university than the library.

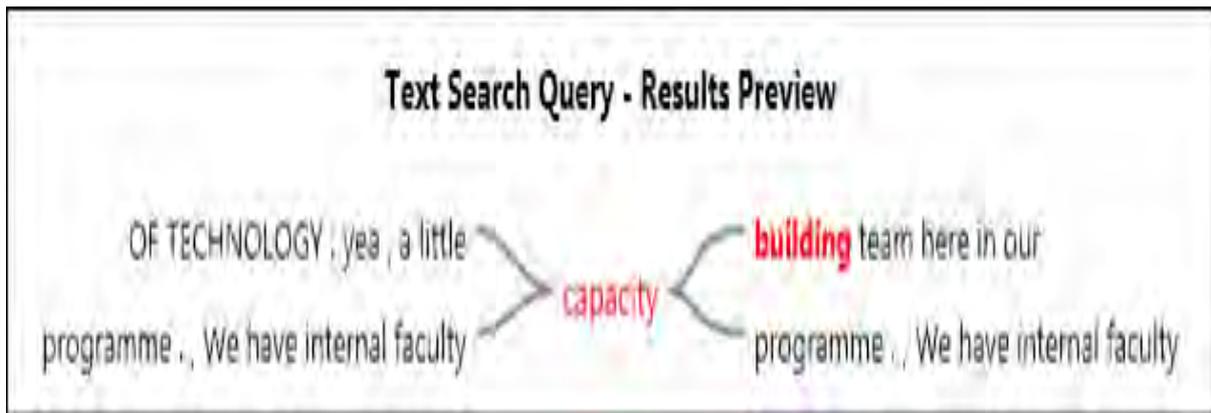


Figure 5.6: Capacity Building Programmes

A summary of the interview responses on capacity building programmes towards adoption and use of electronic instructional media is shown in Table 5.14.

Table 5.14: Summary of Interview Responses on Capacity Building Programmes (N=10)

Respondent	Responses
Respondent 2	<i>“None that I’m aware of”</i>
Respondent 4	<i>“The library organises programs on information literacy for academics. For instance, we recently had one for those in the Faculty of Agriculture and in fact, yesterday (18th March, 2015), we had information literacy training for academics in the College of Medicine”</i>
Respondent 5	<i>“We do organise training on emerging technologies. Although, much has not been happening in this regard. We have over 1000 academics but only about 300 from across all the faculties have been given some form of training”</i>
Respondent 10	<i>“Just like I told you, there are training opportunities, we have expertise within the university. This is a major facilitator”</i>
Respondent 7	<i>“regular training goes on here from time to time”</i>

(Source: Researcher’s survey data output, 2015)

The interview probed further to ascertain if there is budgetary allocation for acquisition and installation of electronic instructional media in lecture rooms and the various faculties. The interviewees acknowledged that there is budgetary allocation for acquisition and installation of electronic instructional media as shown in Figure 5.7. Every year, each faculty presents a

budget, and provision is made in the university’s budget for acquisition and installation of hardware and software. Although, the budgetary allocation is sometimes central, departments/faculties are free to invest in electronic instructional media. One of the deans pointed out that: *“the budgetary allocation is small and often times not enough to acquire necessary hardware and software for teaching because of the unpredictable exchange rate and depreciation of naira”*.

It was the utmost desire of the respondents that budgetary allocation for electronic instructional media should be increased so as to provide necessary electronic instructional media within the university. In one of the universities, it was revealed by one of the interviewees that:

“the faculties have some good financial resources to purchase hardware and software but the money for this purpose can never be enough because of devaluation of naira and the constant changing technology.”

Another respondent in another university had this to say:

“budget is centrally controlled and not by the colleges. Since this centre has the mandate to purchase, provide and install both hardware and software within this university, we make the budget and seek for approval...”



Figure 5.7: Budgetary Allocation for Acquisition and Installation of Electronic Instructional Media

The responses of some other interviewees on budgetary allocation for acquisition and installation of electronic instructional media are summarised in Table 5.15.

Table 5.15: Summary of Interview responses on Budgetary Allocation for Acquisition of Electronic Instructional Media (N=10)

Respondent	Responses
Respondent 1	<i>“I don’t think there is a central vote for the acquisition and installation of electronic instructional media in lecture rooms and faculty”</i>
Respondent 2	<i>“In this university, every unit has control over its own budget. So, departments are free to invest in electronic instructional media”</i>
Respondent 6	<i>“... it is centrally controlled, every college in the institution is treated the same in term of allocation of funds. Although some colleges are bigger than the other, but what we need is provided”</i>
Respondent 9	<i>“.... so acquisition and implementation of electronic instructional media is through the ICT centre”</i>
Respondent 10	<i>“we make the budget and seek for approval for acquisition and installation of electronic instructional media (hardware and software) from designated office”</i>
Respondent 9	<i>“No we do not have budgetary allocation for acquisition and installation of electronic instructional media in lecture rooms and faculty. It lies within the discretion of the faculty or department to acquire”</i>

(Source: Researcher’s survey data output, 2015)

Furthermore, from the themes that emerged from the qualitative data, the interviewees underscore that the library, being a repository of knowledge within the university system, has a role to play in the adoption and use of electronic instructional media. This suggests that aside from provision of technological infrastructure and a conducive environment for adoption and use of electronic instructional media, the library should be involved in promoting adoption and use of electronic instructional media among academics. The respondents were asked to express their opinion on the role the library should play in facilitating adoption and use of electronic instructional media among academics in Nigerian universities. All the interviewees acknowledged that the library should support academics in various faculties on the use of electronic instructional media in teaching. It is noteworthy that

the deans and the directors of centre for information technology expected the library to play many roles in this regard.

Table 5.16: Summary of Interview Responses on the Role of the Library in Facilitating Adoption and Use of Electronic Instructional Media (N=10)

Respondent	Responses
Respondent 1	<i>“... the library should sensitise the academic community on how to use the available resources in the library and various electronic instructional media”</i>
Respondent 4	<i>“The library should invest in electronic instructional media. Not all the students are from financially buoyant families. Therefore, such students should be provided with hardware (desktop, laptop computers etc) by the library. Also, the library should also engage in digitisation of lecture notes of academics and dissertation. The library should also be involved in archiving and re-archiving the intellectual output (resources) of academics. The library should provide information literacy training for academics on a regular basis”.</i>
Respondent 5	<i>“the library should serve as a centre that will provide for those departments or individuals (academics and students) who cannot acquire. The library should also serve as an archive for keeping the electronic content that are being generated, particularly the lecture notes , which only reside in the laptops of academics”</i>
Respondent 7	<i>“the library should be involved in training academics on how to use these electronic instructional media”.</i>
Respondent 9	<i>“The library should enlighten academics on e-learning platforms and institutional repository”</i>
Respondent 10	<i>“The library should subscribe to several online databases to expand the horizon of teaching and learning. The library should float workshops and seminars for various colleges/faculties in the university”</i>

(Source: Researcher’s survey data output, 2015)

From the synopsis provided in Table 5.16, the library is expected to play the following roles in facilitating adoption and use of electronic instructional media among academics:

- educate and create awareness and facilitate access to some if not all the electronic instructional media
- enlighten academics on e-learning platforms and institutional repositories
- ensure that both academics and students have 24/7 access to electronic instructional media, particularly from the library portal
- float workshops and seminars for various colleges/faculties
- serve as a centre that drives adoption and use of electronic instructional media

The qualitative study also ascertained if there are assessment methodologies in place for evaluating academics on the use of electronic instructional media into teaching and learning. Responses (see Table 5.17) from the interview showed that in one of the universities surveyed, the use of electronic instructional media in teaching, and uploading of lecture notes are part of the criteria for promoting academics. There is also a monitoring body within the campus whose role is to ensure use of electronic instructional media in teaching. One of the respondents said “*the Academic Planning Unit goes round the university to ensure that academics conform to the use of electronic instructional media for lecture delivery on a regular basis*”. This implies that in one of the universities, adoption and use of electronic instructional media in teaching is mandatory.

Table 5.17: Summary of Interview Responses on Assessment Methodologies on the Use of Electronic Instructional Media Into Teaching (N=10)

Respondent	Responses
Respondent 1	<i>“We have the Quality Assurance team who go around to assess academics”</i>
Respondent 2	<i>“None to the best of my knowledge”</i>
Respondent 6	<i>“We have monitoring bodies such as Directorate of Quality Assurance and office of the Director of Academic Planning”</i>
Respondent 9	<i>“Yes we have. One of the criteria for promotion of academics is uploading of lecture notes in the repository. Punitive measures are taken against any academic who is deficient”</i>

(Source: Researcher’s survey data output, 2015)

5.6 Influence of Media Literacy Skills on Adoption and Use of Electronic Instructional Media

The third research question sought to determine the influence of media literacy skills on adoption and use of electronic instructional media. In this present study, media literacy is conceptualised as a measure of an individual’s ability to use digital resources (Beetham, 2010). Media literacy, therefore, was operationalised as competence in using different types of electronic instructional media; use the internet; use boolean terms to locate information from the Internet; identify electronic resources appropriate to prepare lecture notes; download files from the internet, upload files on the internet; save files from a web page; send attachments via e-mail; use web 2.0 tools/technologies; design course content in electronic format; communicate with students effectively using electronic media; and partake in online discussion. A summary of the regression analysis showing the relative contributions of media literacy skills to adoption and use of electronic instructional media is presented in Table 5.18.

Table 5.18: Regression Analysis of Relationship between Media Literacy Skills and Adoption and Use of Electronic Instructional Media (N= 215)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2449.017	1	2449.017	19.423	0.000 ^b
	Residual	26856.643	213	126.088		
	Total	29305.660	214			
		R = 0.289 ^a	R ² = 0.084,	Adjusted R ² = 0.079,	SEE = 11.229	

The results in Table 5.18 show a regression analysis of the relationship between media literacy skills and adoption and use of electronic instructional media. The results suggest a significant relationship between media literacy skills and adoption and use of electronic instructional media $\{F(1,213) = 19.423, p < .05\}$. The results also revealed that media literacy skills and adoption and use of electronic instructional media were positively related ($R = 0.289$) though the relationship was weak. The variable media literacy skills accounted for 7.9% of the total variance in the adoption and use of electronic instructional media ($R^2 = 0.079$).

5.7 Moderating Effect of Gender, Age and Teaching Experience on Adoption and Use of Electronic Instructional Media

Research question four sought to determine the moderating effect of demographic variables such as gender, age and teaching experience on the relationship between independent variables and the dependent variable. The researcher used age, gender and teaching experience as moderating variables of technology adoption and use. Gender refers to the sex of academics and teaching experience stands for the number of years academics have been involved in teaching within the university.

Multiple regression analysis was done to determine the moderating effect of demographic variables (gender, age, and teaching experience) as predictors of adoption and use of electronic instructional media for teaching purposes. The independent variables are performance expectancy, compatibility, trialability, social influence, effort expectancy, observability and facilitating conditions. The moderators are categorical and for this purpose dummy coding as recommended by Abu-Shanab and Pearson (2007) was used such that members of one group are arbitrarily assigned a 0 and other members of the other group are assigned 1. However, this coding scheme is recommended for binary moderators (e.g. gender). But for poly-dichotomous moderators (age and teaching experience), a re-categorisation was done. Age was collapsed and re-categorised as old = 1 and Young = 0 while teaching experience was re-categorised as less experienced = 0 and more experienced = 1.

The regression analysis for the interaction effects was carried out using a Moderated Multiple Regression (MMR). There are two steps in conducting moderated multiple regression analysis. They are first order which generate model 1 as an output and MMR model

(including the first- order effects as well as a product term) which generates model 2 in the output with the addition of an interaction term using the block method, In the first block, the independent variables (performance expectancy, effort expectancy, social influence, facilitating conditions, compatibility, trialability, observability) and the moderator (gender, age and teaching experience dummy) were entered into the model. The second block included all of these variables and the interaction terms. The results of the analyses are presented in Tables 5.19a, 5.19b and 5.19c.

Table 5.19a: Moderating Effect of Gender on the Relationship between the Independent Variables and Dependent Variable (N = 215)

Model Summary						
R	R Square	F	df1	df2	Sig. F	
.427	.182	5.742	8	206	.000	
.455	.207	6.453	1	205	.012	
Model						
	B	Se	T	p	LBCI	UBCI
Constant	26.862	5.901	4.552	.000	15.228	38.496
Performance Expectancy	.178	.183	.970	.333	-.184	.540
Effort Expectancy	.314	.186	1.685	.093	-.053	.681
Social Influence	.317	.213	1.487	.139	-.103	.738
Facilitating conditions	.396	.123	3.221	.001	.154	.639
Compatibility	-.121	.179	-.678	.498	-.473	.231
Trialability	-.192	.346	-.555	.579	-.873	.489
Observability	-.333	.326	-1.022	.308	-.976	.309
Gender	-.868	1.682	-.516	.607	-4.185	2.449
Constant	40.429	7.902	5.116	.000	24.848	56.009
Performance Expectancy	.232	.182	1.274	.204	-.127	.592
Effort Expectancy	.219	.188	1.167	.245	-.151	.589
Social Influence	.203	.215	.942	.347	-.222	.628
Facilitating conditions	.263	.132	1.992	.048	.003	.524
Compatibility	-.370	.202	-1.834	.068	-.767	.028
	B	Se	T	p	LBCI	UBCI
Trialability	-.296	.344	-.862	.390	-.974	.381
Observability	-.620	.341	-1.817	.071	-1.292	.053
Interaction	5.104E-011	.001	2.540	.012	.000	.001

a. Dependent Variable: Adoption and use of electronic instructional media

The results in Table 5.19a indicate the moderating effect of gender and its significance on the independent variables (performance expectancy, effort expectancy, social influence, facilitating conditions, compatibility, trialability, observability) and adoption and use of electronic instructional media. The result showed that the overall interaction effect of gender was statistically significant on the relationship between the independent variables and

adoption and use of electronic instructional media $\{R^2 = .025, F= 1,205= 6.453, p = .012, b = 5.104E-011, t (206) = 2.540\}$. The results further showed that gender did not significantly moderate the relationship between each of the independent variables that is, performance expectancy, effort expectancy, social influence, compatibility, trialability, and observability and the dependent variable which is adoption and use of electronic instructional media ($p>0.05$). However, the relationship between facilitating conditions and adoption and use of electronic instructional media was moderated by gender $\{\beta = 0.396, t (206) = 3.221, p = 0.001\}$.

Table 5.19b: Moderating Effect of Age on the Relationship between the Independent Variables and Dependent Variable (N = 215)

Model Summary						
R	R Square	F	df1	df2	Sig. F	
.429 ^a	.184	5.798	8	206	.000	
.446 ^b	.199	3.862	1	205	.051	
Model	B.	Se	T	p	LBCI	UBCI
Constant	27.376	5.834	4.693	.000	15.875	38.878
Performance Expectancy	.159	.185	.862	.390	-.205	.524
Facilitating conditions	.398	.123	3.238	.001	.156	.640
Compatibility	-.148	.178	-.831	.407	-.500	.203
Trialability	-.180	.345	-.522	.602	-.861	.501
Observability	-.303	.329	-.920	.359	-.952	.346
Age	-.743	.930	-.799	.425	-2.576	1.091
Constant	36.794	7.519	4.894	.000	21.970	51.619
Performance Expectancy	.214	.186	1.151	.251	-.152	.580
Effort Expectancy	.245	.192	1.278	.203	-.133	.623
Social Influence	.184	.222	.832	.406	-.253	.621
	B	Se	T	p	LBCI	UBCI
Facilitating conditions	.326	.127	2.557	.011	.075	.577
Compatibility	-.298	.193	-1.546	.124	-.678	.082
Trialability	-.249	.345	-.722	.471	-.929	.431
Observability	-.457	.336	-1.360	.175	-1.120	.206
Age	-1.765	1.060	-1.665	.097	-3.855	.325
Interaction	2.731E-011	.000	1.965	.051	.000	.000

a. Dependent Variable: Adoption and use of electronic instructional media

Table 5.19b shows the moderating effect of age and its significance on the independent variables (performance expectancy, effort expectancy, social influence, facilitating conditions,

compatibility, trialability, and observability) and adoption and use of electronic instructional media. The result showed that the overall interaction of age on the relationship between the independent variables and adoption and use of electronic instructional media was statistically not significant $\{R^2 = 0.015, F(1,205) = 3.862, p = .051, b = 2.731E-011, t(206) = 1.965\}$. The results also revealed that age did not significantly moderate the relationship between each of the independent variables that is, performance expectancy, effort expectancy, social influence, compatibility, trialability, and observability and the dependent variable which is adoption and use of electronic instructional media ($p > 0.05$). However, the relationship between facilitating conditions and adoption and use of electronic instructional media was moderated by age $\{\beta = 0.398, t(206) = 3.238, p = 0.001\}$.

Table 5.19c: Moderating Effect of Teaching Experience on the Relationship between the Independent Variables and Dependent Variable (N = 215)

Model Summary						
R	R Square	F	df1	df2	Sig. F	
.426 ^a	.182	5.712	8	206	.000	
.459 ^b	.211	7.577	1	205	.006	
Model						
	B	Se	T	p	LBCI	UBCI
Constant	26.191	5.752	4.553	.000	14.851	37.532
Performance Expectancy	.175	.184	.947	.345	-.189	.538
Effort Expectancy	.312	.187	1.670	.097	-.056	.680
Social Influence	.318	.214	1.484	.139	-.104	.739
Facilitating conditions	.393	.123	3.194	.002	.151	.636
Compatibility	-.132	.177	-.744	.458	-.482	.218
Trialability	-.187	.346	-.540	.590	-.869	.495
Observability	-.339	.326	-1.038	.300	-.982	.305
Experience	-.156	.569	-.274	.784	-1.278	.966
Constant	39.675	7.487	5.299	.000	24.913	54.436
Performance Expectancy	.241	.183	1.317	.189	-.120	.602
Effort Expectancy	.208	.188	1.109	.269	-.162	.578
Social Influence	.186	.216	.859	.391	-.240	.611
Facilitating conditions	.297	.126	2.353	.020	.048	.546
	B	Se	T	p	LBCI	UBCI
Compatibility	-.369	.195	-1.895	.060	-.753	.015
Trialability	-.306	.343	-.891	.374	-.982	.371
Observability	-.580	.333	-1.743	.083	-1.237	.076
Experience	-1.042	.646	-1.613	.108	-2.316	.232
Interaction	2.584E-011	.000	2.753	.006	.000	.000

a. Dependent Variable: Adoption and usage of electronic instructional media

Table 5.19c shows the moderating effect of teaching experience and its significance on the independent variables (performance expectancy, effort expectancy, social influence, facilitating conditions, compatibility, trialability, observability) and adoption and use of electronic instructional media. The result showed that the overall interaction effect of teaching experience was statistically significant on the relationship between the independent variables and adoption and use of electronic instructional media { $R^2 = .182$, $F(8, 206) = 5.712$, $p = .000$ }. The results showed that teaching experience did not significantly moderate the relationship between each of the independent variables that is, performance expectancy, effort expectancy, social influence, compatibility, trialability, and observability and the dependent variable which is adoption and use of electronic instructional media ($p > 0.05$). However, the relationship between facilitating conditions and adoption and use of electronic instructional media was moderated by teaching experience { $\beta = 0.393$, $t(206) = 3.194$, $p = 0.002$ }.

5.8 Challenges of Adoption and Use of Electronic Instructional Media

The fifth research question sought to examine the challenges faced by academics in the adoption and use of electronic instructional media. The construct under investigation was conceptualised and operationalised to mean the obstacles academics experience when it comes to using electronic instructional media in teaching. To answer this research question, responses to nineteen items which include funding, support from internal IT staff, access, budget allocation, culture, bandwidth, institutional policy, training, ICT anxiety, power supply, technical support and time were used as parameters to determine the challenges of adoption and use of electronic instructional media among academics. The descriptive statistics on challenges of adoption and use of electronic instructional media is presented in Table 5.20.

Table 5.20: Challenges of Adoption and Use of Electronic Instructional Media (N = 215)

Statement	N	Min.	Max.	Mean	Std. Dev.
Lack of top management support	215	1	5	3.42	1.448
Lack of fund	215	1	5	3.15	1.488
Lack of training on use of emerging technologies for teaching and learning	215	1	5	3.14	1.435
Inadequate support from internal (IT) staff	215	1	5	3.35	1.419
Limited access to electronic instructional media	215	1	5	3.37	1.378
Inadequate budgetary allocation for acquisition of electronic instructional media	215	1	5	3.35	1.406
Poor culture of using technology for teaching	215	1	5	3.40	1.328
Low bandwidth	215	1	5	3.20	1.455
Institutional policy on electronic instructional media adoption and use	215	1	5	3.44	1.338
Lack of training	215	1	5	2.96	1.337
Too much workload of academics	215	1	5	3.51	1.264
ICT anxiety	215	1	5	3.20	1.341
Limited availability of software and hardware	215	1	5	3.03	1.455
Poor and unreliable internet access	215	1	5	3.46	1.289
Lack of support from subject / faculty librarians	215	1	5	3.51	1.321
Student population is too large	215	1	5	3.26	1.390
Lack of technical support	215	1	5	3.06	1.589
Unreliable power supply	215	1	5	3.39	1.321
Time	215	1	5	3.37	1.279

(Source: Researcher's survey data output, 2015)

Table 5.20 presents the mean and standard deviations of respondents' scores on the challenges of adoption and use of electronic instructional media. From the data presented, student population is too large recorded highest mean score and occupies the first position among the parameters predefined as challenges on adoption and use of electronic instructional media in educational settings. This was closely followed by lack of institutional policy on electronic instructional media adoption and use which had a mean score of 3.44. Overall, respondents rated all the items above 3.00 with the exception of too much workload of academics which had a mean score of 2.96. This result is an indication that respondents do not perceive workload as an impediment to adoption and use of electronic instructional media.

Research question five was also addressed by the qualitative aspect of the study. The analysis of the interview shows that infrastructure (low bandwidth, poor electricity supply, fluctuating and poor access to the internet) is a major challenge in the adoption and use of electronic instructional media. There is insufficient budgetary allocation, institutional unresponsiveness to technological developments, and attitude of some academics towards use of technology in teaching is not satisfactory as some academics are still thick skinned and so remain conventional teachers. However, student population was not among the factors identified by interviewees as one of the challenges of adoption and use of electronic instructional media. It was revealed that student size will give credence to adoption and use of electronic instructional media in teaching and learning. The report of the qualitative analysis is shown in Figure 5.8 and Table 5.21.

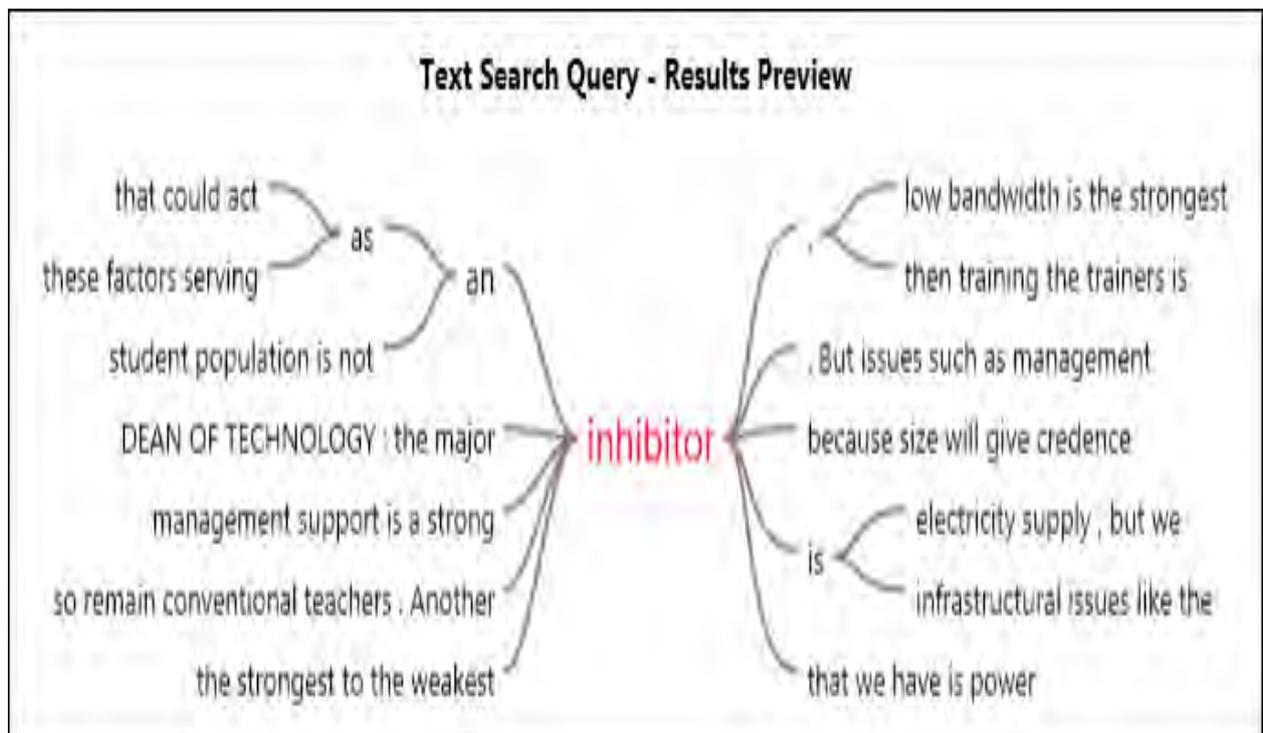


Figure 5.8: Challenges of Adoption and Use of Electronic Instructional Media

Table 5.21 Summary of Interview Responses on Challenges of Adoption and Use of Electronic Instructional Media (N=10)

Respondent	Responses
Respondent 1	<i>“institutional in-difference to technological developments”</i>
Respondent 2	<i>“we had the problem of bandwidth, but it’s getting better with the optical fibre”.</i>
Respondent 3	<i>“cost of licensed software is too much and we cannot afford them”.</i>
Respondent 4	<i>“the epileptic nature of our power supply, hence the money to improve on provision of electronic instructional media is being invested on the provision of alternate power supply”</i>
Respondent 5	<i>“to me, management support is a strong inhibitor, then training and re-training is lacking. Those academics that have been trained on the use of electronic instructional media with the hope that they will train others are not bringing more people on board”.</i>
Respondent 7	<i>“I would say factors such as commitment from management, funding and unsteady power supply is holding us down as a nation”.</i>

(Source: Researcher’s survey data output, 2015)

The qualitative aspect of this study sought to ascertain how the challenges associated with adoption and use of electronic instructional media can be overcome. Results shown in Table 5.22 revealed that universities can overcome challenges of adoption and use of electronic instructional media by developing policies that would make academics move away from using the traditional method of teaching to the electronic arena. Some of the interviewees felt that there is need for the government and individual institutions to have a change of attitude towards developing technological infrastructures in the educational sector. Furthermore, in the opinion of the interviewees, universities should unearth alternative to the epileptic power supply in their institution. One of the respondents indicated that there should be more

commitment from university management in terms of funding and provision of electronic instructional media. In the words of one of the interviewees:

“I think basically the solution to these challenges is tied to the disposition of leadership. For instance, in this university, we are running 24/7 light. So it is all about leadership. What is the perspective of the leaders? What future can they see and how are they able to drive that future? The truth of the matter is that the leaders at the helm of affairs in our universities must embrace use of electronic instructional media in teaching and learning, because the enforcement and implementation still falls on them”

Table 5.22: Summary of Interview responses on Solution to Challenges of Adoption and Use of Electronic Instructional Media (N= 10)

Respondents	Responses
Respondent 1	<i>“We should be thinking of what goes on in HARVARD. for every lecture, you go with your powerpoint, you have access to apps that enhance teaching”</i>
Respondent 2	<i>“The university should also develop policies that will make academics move away from using this way of teaching to the electronic arena”</i>
Respondent 3	<i>“a change of attitude by both government and the institutional heads that’s what we need”.</i>
Respondent 5	<i>“Two points to solve it all: we need an ICT policy and more hands to provide technical support and training”.</i>

(Source: Researcher’s survey data output, 2015)

5.9 Hypothesis Testing

This section presents the results of the hypotheses to establish how the independent variables in this study predict the adoption and use of electronic instructional media for teaching purposes. The study had four hypotheses, as outlined below.

5.9.1 Research Hypothesis 1

H₀: There is no significant relationship between the DOI constructs (compatibility, trialability, observability) and adoption and use of electronic instructional media

The results in Tables 5.23 and 5.24 show a regression analysis of the DOI constructs (compatibility, trialability, and observability) and adoption and use of electronic instructional media for teaching and learning purposes among academics.

Table 5.23: Regression Analysis of the DOI constructs and Adoption and Use of Electronic Instructional Media (N=125)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1891.027	3	630.342	4.852	0.003 ^b
	Residual	27414.633	211	129.927		
	Total	29305.660	214			
R = 0.254,		R ² = 0.065,	Adjusted R ² = 0.051,	SEE = 11.399		

a. Dependent variable: Adoption and use of electronic instructional media

b. Predictors: (Constant), Observability, Compatibility, Trialability

The results in Table 5.23 suggest a joint significant relationship between the independent variables (compatibility, trialability, and observability) and dependent variables (adoption and use of electronic instructional media) ($F(3, 211) = 4.852, p < .05$). The results revealed that the independent variables (compatibility, trialability, and observability) were positively related ($R = 0.254$), though the relationship was weak. The independent variables were found to have jointly accounted for 6.5% of the total variance in adoption and use of electronic instructional media by academics ($R^2 = 0.065$). Hence, we reject null hypothesis and therefore conclude that there is a significant relationship between compatibility, trialability, observability and adoption and use of electronic instructional media.

Table 5.24: Relative Contribution of DOI constructs and Adoption and Use of Electronic Instructional Media (N = 215)

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	30.431	5.176		5.879	0.000
	Compatibility	-0.063	0.186	-0.023	-0.337	0.737
	Trialability	0.845	0.257	0.272	3.292	0.001
	Observability	-0.178	0.339	-0.043	-0.525	0.600

a. Dependent Variable: Adoption and use of electronic instructional media

The results presented in Table 5.24 showed the individual contribution of the constructs (compatibility, trialability, and observability) to the dependent variable (adoption and use of electronic instructional media). Compatibility ($\beta = - 0.023$ $t = - 0.037$ $p > .05$) and observability ($\beta = - 0.043$ $t = - 0.525$ $p > .05$) are not significantly contributing to adoption and use while trialability $\beta = 0.272$ $t = 3.292$ $p < .05$ is significantly contributing to adoption and use electronic instructional media among academics.

5.9.2 Research Hypothesis 2

H₀: There is no significant relationship between the four main constructs of UTAUT and behavioural intention.

To test this hypothesis, a multiple regression analysis was conducted as shown in Tables 5.25 and 5.26 respectively. The results indicate that there was a joint significant relationship $F(4, 210) = 63.134$, $p < .05$ between the independent variables (performance expectancy, effort expectancy, social influence and facilitating conditions) and dependent variables (behavioural intention). The results revealed that the independent variables (performance expectancy, effort expectancy, social influence and facilitating conditions) were positively related ($R=0.739$) with behavioural intention. The result implies that performance expectancy, effort expectancy, social influence and facilitating conditions are significant predictors of behavioural intention of academics towards electronic instructional media adoption and use. From the table, it is evident that the independent variables were found to have jointly accounted for 54.6% of the total variance in behavioural intention to adopt and use electronic instructional media by academics for teaching purposes ($R^2 = 0.546$).

Table 5.25: Regression Analysis of the UTAUT Main constructs and Behavioural Intention (N = 215)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3202.842	4	800.710	63.134	.000 ^b
	Residual	2663.372	210	12.683		
	Total	5866.214	214			
R = .739		R ² = .546	Adjusted R ² = .537	SEE = 3.561		

a. Dependent Variable: Behavioural intention

b. Predictors: (Constant), Facilitating conditions, Performance expectancy, Effort Expectancy, Social Influence

The result in Table 5.25 suggests that the combination of performance expectancy, effort expectancy, social influence and facilitating conditions significantly predict behavioural intention, [F (4, 210) = 63.134, p < .05]. Hence, we reject null hypothesis and therefore conclude that there is a significant relationship between the four main construct of UTAUT and behavioural intention. This result implies that performance expectancy, effort expectancy, social influence and facilitating conditions are capable of explaining 54.6% of the variance in behavioural intention of academics to adopt and use electronic instructional media in teaching.

The results presented in Table 5.26 below showed the individual contribution of the predictors (performance expectancy, effort expectancy, social influence, facilitating conditions) on the dependent variable (behavioural intention).

Table 5.26: Relative Contribution of UTAUT main constructs on Behavioural Intention (N = 215)

Model	Unstandardised Coefficients		Standardised Coefficients Beta	T	Sig.
	B	Std. Error			
(Constant)	3.872	1.422		2.724	.007
1					
Performance Expectancy	.404	.057	.433	7.116	.000
Effort Expectancy	.122	.057	.136	2.143	.033
Social Influence	.291	.065	.289	4.456	.000
Facilitating conditions	.004	.040	.006	.100	.920

a. Dependent Variable: Behavioural intention

The result suggests that only facilitating conditions (B = 0.006 t = 0.100 p > .05) is not significantly contributing to behavioural intention, while performance expectancy $\beta = 0.433$ t = 7.116 p < .05), effort expectancy (B = 0.136 t = 2.143 p < .05), and social influence ($\beta = 0.289$ t = 4.456 p < .05) are significantly contributing to the behavioural intention to adopt and use electronic instructional media.

5.9.3 Research Hypothesis 3

H₀: There is no significant relationship between behavioural intention and adoption and use of electronic instructional media for teaching purposes.

The results in Table 5.27 showed a regression analysis of the relationship between behavioural intention and adoption and use of electronic instructional media for teaching purposes by academics. The results suggest a joint significant relationship between behavioural intention and adoption and use of electronic instructional media [F (1, 213) = 19.999, p < .05].

Table 5.27: Regression Analysis between Behavioural Intention and Adoption and Use of Electronic Instructional Media (N = 215)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2515.398	1	2515.398	19.999	.000 ^b
	Residual	26790.262	213	125.776		
	Total	29305.660	214			
R = .293		R ² = .086	Adjusted R ² = .082,	SEE = 11.215		

a. Dependent Variable: Adoption and Use of Electronic Instructional Media

b. Predictors: (Constant), Behavioural intention

The results showed that the independent variables (behavioural intention) and adoption and use of electronic instructional media were positively related (R = 0.293). The result implies that behavioural intention and adoption and use of electronic instructional media are positively related. From the table, it is evident that behavioural intention was found to account for 8.6% of the total variance in adoption and use electronic instructional media by academics for teaching purposes (R² = 0.086). Therefore, behavioural intention significantly predict adoption and use of electronic instructional media [F (1, 213) = 19.999, p < .05]. Hence, we reject null hypothesis and therefore conclude that that there is a significant relationship between behavioural intention and adoption and use of electronic instructional media. This result also implies that behavioural intention is capable of explaining 8.6% of the variance in adoption and use electronic instructional media in teaching among academics.

The results presented in Table 5.28 showed the relative contribution of behavioural intention to adoption and use of electronic instructional media.

Table 5.28: Relative Contribution of Behavioural Intention on Adoption and Use of Electronic Instructional Media (N = 215)

Model	Unstandardised Coefficients		Standardised Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	27.337	3.731		7.327	.000
Behavioural intention	.655	.146	.293	4.472	.000

a. Dependent Variable: Adoption and use of electronic instructional media

This result indicates that behavioural intention is significantly contributing ($\beta = 0.293$ $t = 7.327$ $p < .05$) to adoption and use of electronic instructional media.

5.9.4 Research Hypothesis 4

H₀: There is no significant relationship between demographic variables (gender, age, and teaching experience) and adoption and use of electronic instructional media.

The results in Table 5.29 show a regression analysis of the joint significant relationship ($F_{3, 211} = 0.195$, $p > 0.05$) between demographic variables (gender, age and teaching experience) and adoption and use of electronic instructional media for teaching purposes.

Table 5.29: Regression Analysis of Demographic Variables (Gender, Age, Teaching Experience) and Adoption and Use of Electronic Instructional Media (N = 215)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	81.170	3	27.057	0.195	0.899 ^b
	Residual	29224.490	211	138.505		
	Total	29305.660	214			
R = 0.053		R ² = 0.003	Adjusted R ² = -0.011	SEE = 11.769		

a. Dependent variable: Adoption and use of Electronic Instructional Media

b. Predictors (Constant): teaching experience, Gender, Age

The results revealed that there is no significant relationship between demographic variables (gender, age and teaching experience) and adoption and use of electronic instructional media. Hence, we do not reject null hypothesis.

The results in Table 5.30 show the relative contribution of demographic variables (gender, age, and teaching experience) to the dependent variable (adoption and use of EIM).

Table 5.30: Relative Contribution of Demographic Variables (Gender, Age, and Teaching Experience) on Adoption and Use of Electronic Instructional Media (N = 215)

Model		Unstandardised Coefficients		Standardised Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	45.986	3.851		11.942	.000
	Gender	-.383	1.817	-0.015	-.211	.833
	Age	-.537	1.173	-0.038	-.457	.648
	Teaching experience	-.146	.739	-0.016	-.197	.844

a. Dependent Variable: Adoption and use of electronic instructional media

b. Predictors (Constant): teaching experience, Gender, Age

The result showed that none of the demographic variables {gender ($\beta = 0.015$), age ($\beta = -0.038$) and teaching experience ($\beta = -0.016$)} at ($p > 0.05$) have significant influence on the dependent variable (adoption and use of electronic instructional media). Therefore, age, gender, and teaching experience of the respondents do not have any direct influence on the adoption and use of electronic instructional media for teaching purposes.

5.10 Summary of Findings

This chapter analysed data and presented the findings on the research questions that were investigated. The findings indicate that various types of electronic instructional media have been adopted and used by academics for the purpose of teaching and learning. The findings revealed that academics had made changes to accommodate electronic instructional media in teaching and learning. The results indicated that personal computer, MS Word, Internet, e-mail, mobile phones, mobile devices, web resources, e-books and PowerPoint were used by academics on a daily basis for teaching purposes. The findings also revealed the different purpose for which academics used electronic instructional media to include preparation of lecture notes and presentation of lectures.

The results showed that facilitating conditions and effort expectancy were the best predictors of adoption and use of electronic instructional media. The study identified facilitating conditions such as adequate bandwidth, steady power supply or electricity and training as major factors affecting use of instruction media for teaching purposes. The results showed a significant relationship between media literacy skills and adoption and use of electronic instructional media. Further findings showed that gender and teaching experience moderate

the relationship between the independent variables (performance expectancy, compatibility, social influence, trialability, effort expectancy, observability, facilitating condition) and the dependent variable (adoption and use of electronic instructional media).

The results from the test of the hypotheses in the study showed a significant relationship between the DOI constructs (compatibility, trialability, observability) and adoption and use of electronic instructional media for teaching purposes. There was also a significant relationship between the main UTAUT constructs (facilitating conditions, performance expectancy, effort expectancy, social influence) and behavioural intention to adopt and use electronic instructional media by academics for teaching purposes. Only facilitating conditions ($\beta = 0.006$ $t = 0.100$ $p > .05$) is not significantly contributing to behavioural intention, while performance expectancy ($B = 0.433$ $t = 7.116$ $p < .05$), effort expectancy ($\beta = 0.136$ $t = 2.143$ $p < .05$), and social influence ($\beta = 0.289$ $t = 4.456$ $p < .05$) are significantly contributing to the behavioural intention to adopt and use electronic instructional media among academics.

There is a significant relationship between behavioural intention and adoption and use of electronic instructional media for teaching purposes. None of the demographic variables {gender ($\beta = -0.015$), age ($\beta = -0.038$) and teaching experience ($\beta = -0.016$)} at ($p > 0.05$) had significant relationship with the dependent variable (adoption and use of electronic instructional media). Therefore, age, gender, and teaching experience of the respondents do not influence adoption and use of electronic instructional media.

Some of the challenges to adoption and use of electronic instructional media were lack of institutional policy on electronic instructional media adoption and use; lack of training on the use of electronic instructional media; inadequate budgetary allocation for acquisition and installation of electronic instructional media; lack of technical support; poor culture of using technology for teaching and learning. Other challenges identified were limited access to electronic instructional media; inadequate support from internal it staff; ICT anxiety; time; low bandwidth and lack of support from faculty/subject librarians.

CHAPTER SIX

INTERPRETATION AND DISCUSSION OF FINDINGS

6.1 Introduction

The meaning, purpose and relevance of the findings of any scholarly research are revealed in the discussion chapter. According to Hess (2004), the fundamental aim of this chapter in a thesis is to discuss the similarities and differences between the results of a study and previous findings, for objective clarifications, confirmations and conclusions that would reinforce the importance of the current study.

The aim of this study was to investigate the extent of adoption and use of electronic instructional media and factors influencing the adoption and use of electronic instructional media among academics in selected Nigerian universities. The study addressed the following research questions: What is the extent of adoption and use of electronic instructional media in selected Nigerian universities? What factors influence adoption and use of electronic instructional media? How do media literacy skills influence adoption and use of electronic instructional media? What is the moderating effect of gender, age and teaching experience on adoption and use of electronic instructional media? What challenges are faced in the adoption and use of electronic instructional media by academics in selected Nigerian universities?

This chapter is organised around the research questions, the key variables of the theories underpinning the study and broader issues of the research problem.

6.2 Demographic Characteristics of Respondents

Findings in Table 5.2a provide demographic information of academics drawn from the University of Ibadan and Covenant University in South West Nigeria who took part in this study. Most of the respondents (47.9%) were from Science/Natural and Applied Science. The least number of responses (33.5 %) was obtained from the Faculty of Arts/School of Leadership Development. This could be accrued to the fact that the total population of academics in the Faculty of Science exceeded that of the faculty of Arts/Leadership Development (see section 4.6). Additionally, Rolfe, Alcocer, Bentley, Milne and Meyer-Sahling (2008) acknowledge that academics in the Sciences are more aware of the potential benefits of technology in teaching. The authors submit that academics in the Sciences are of the opinion that the use of electronic instructional media is appropriate for their courses.

However, this is contrary to the views of their colleagues in the Arts, who perhaps feel that their courses require deeper levels of analysis and discussions than electronic instructional media could provide (Rolfe, Alcocer, Bentley, Milne and Meyer-Sahling, 2008). The result of this current study contradicts studies by Kisla, Arikan and Sarsar (2009), who reported a higher number of respondents from engineering than other disciplines.

The findings revealed that majority of the respondents (73.0%) are males. According to International Organization for Migration (2014:36) in a report on the National Economic Empowerment and Development Strategy report on the composition of academic staff in Nigerian public universities, majority of academics (83.0%) are male while 17.0% of them are female. A similar study by Ntemana and Olatokun (2012) at the University of Lesotho had majority (55.8%) of the respondents who participated in the study as males. At the University of Ghana, Legon, a survey by Owusu-Ansah (2013:43) showed that out of a population of 154 respondents, 91 (59.0%) were males and 63 (41.0%) were females. A survey by Oshinaike and deKunmisi (2012) at the University of Ibadan similarly showed that 75.0% of their respondents were male academics compared with 25.0% of female academics. The overall findings of this present study imply that gender, sex and teaching experience were significant variables in the study.

6.2.1 Response Rate

Out of the 267 questionnaires administered to academics in the two universities, 215 were completed and returned, giving a response rate of 80.5%. For the qualitative study, out of the eleven respondents who were to take part in the semi-structured interview, ten were interviewed, giving a response rate of 90.9%. The researcher was able to reach all the interviewees except one, who was unable to grant the interview due to his tight schedule. Sivo, Saunders, Chang and Jiang (2006) posit that the standard for return rates is usually 70% to 80%. The two response rates of 80.5% (for the questionnaire) and 90.9% (for the interview), respectively, were considered sufficient in being representative of the entire population of interest (Johnson and Wislar, 2012). In a similar study, Ntemana and Olatokun (2012) used 250 copies of questionnaire, out of which 213 were returned and all were found useful for analysis, resulting in an 85.2% response rate. Mushi (2010) at the University of KwaZulu-Natal administered 53 survey questionnaires and obtained a response rate of 100%. This implies that the response rate was very good. Babbie and Mouton (2001:261) submit

that “a response rate of more than 70% is considered to be very good while 50% response rate is adequate”.

6.3 Adoption and Use of Electronic Instructional Media among Academics in Nigerian Universities

The study sought to ascertain the extent of adoption and use of electronic instructional media in Nigerian universities. According to Evans (2014), the extent of adoption depends on the understanding of construct that shows a positive relationship with behavioural intention and use. In line with this submission, the following parameters were used to determine the extent electronic instructional media adoption and use: types of electronic instructional media adopted by academics, the extent of adoption, use (frequency and purpose of use), behavioural intention and trialability. The corresponding hypothesis sought the relationship between behavioural intention and adoption and use of electronic instructional media for teaching purposes.

6.3.1 Types of Electronic Instructional Media Adopted by Academics in Nigerian Universities

The first aspect of research question one sought to ascertain the types of electronic instructional media that academics had adopted for teaching purposes. Findings revealed that academics had adopted different types of electronic instructional media for teaching purposes in universities. However, the adoption of the LMS in teaching among academics is still predominantly low. These results bear some similarities with Hussein's (2011), who found that the overall adoption of LMS is below satisfactory level in Saudi universities. Although Jafari, McGee and Carmean (2006) argued that academics need to use the LMS in managing courses and organising course content that will engage students, the level of readiness of academics is low. Soydal, Alrb and Ünala (2011) assessed the e-learning readiness of the academics at Hacettepe University in Turkey Faculty of Letters. They found that academics were not ready for e-learning because of lack of training on dealing with e-learning responsibilities. The result of the current study is dissimilar to that of Nagy (2014) and Alharbi and Drew (2014), who found the adoption of LMS among academics in Hungary and Saudi Arabia, respectively. In Hungary, Nagy (2014) found that majority (89.3 %) of academics had adopted LMS, while 7.1 % of them had adopted two different LMS, either at

the faculty or institution level. The study found MOODLE (46 %) as the most adopted LMS in Hungarian higher institutions.

At the Shaqra University in Saudi Arabia, Alharbi and Drew (2014) empirically proved that e-learning can be a reality in any university if only academics' disposition towards ease of use and perceived ease of use of technology is properly addressed. The finding of this current research is also in contrast with that of Chizmar and Williams (2001) at the Illinois State University, where adoption of internet and web technologies was found among academics. According to Groff (2013), computers, blogs, wikis, laptops, interactive whiteboards, digital cameras, scanners, projectors and LMS are all first-order innovations in educational settings; therefore, electronic instructional media belonging to the first-order category should readily be found acceptable by academics. However, some academics, especially those in developed nations, are adopting more sophisticated electronic instructional media. Butler and Sellbom (2002) point out that the reason for the low adoption of LMS may be traced to economic, sociological, organisational and psychological differences. Nevertheless, these findings are indications that academics in Nigerian universities have shifted from the traditional method of teaching and have embraced technology in teaching and learning like their counterparts in Europe, America, Asia, Australia and the rest of Africa. But unlike universities in the UK, USA and Middle East, where adoption of the LMS is more rampant (Arroway, Davenport, Xu and Updegrove, 2010; Robinson and Ally, 2009; Browne, Jenkins and Walker, 2006), the adoption of same is yet to gain much ground among academics in Nigeria. The shift from the chalk-and-talk method to electronic instructional media in the universities surveyed could be attributed to improved access to technology by academics (Blurton, 1999), which Toivanen (2011) says is enhanced by a reduction in bottlenecks that constrain availability and affordability of the necessary electronic instructional media.

Barrette (2015) examined theoretical models that could help academics introduce electronic instructional media into their lectures, using DOI, TAM and UTAUT to provide an explanation of the factors affecting the adoption of technology at the Wayne University in Michigan, United States. Barrette found that social factors such as compensation, technical expertise, attitude and technology-savvy academics are vital in introducing the use of technology into teaching. Barrette concluded that advocates of technology adoption and use in the university should place emphasis on academics' belief system, institutional support and

above all communication. In realising this, many communication channels should be used to provide information on the relative advantage, compatibility, complexity of use, trialability and observability of diverse electronic instructional media. This will help in raising awareness among academics, particularly those who are yet to adopt technology for teaching purposes.

6.3.2 Extent of Adoption and Use of Electronic Instructional Media by Academics

This study sought to ascertain the extent of adoption of electronic instructional media among academics for teaching purposes. The extent of adoption of electronic instructional media in teaching was reflected in the agreement of the respondents with nearly all the attributes that were set to measure the extent of adoption and use of electronic instructional media with the exception of one. The qualitative aspect of the study confirmed this finding, as interviewees also pointed that adoption of electronic instructional media among academics in the selected universities was extensive. However, the findings of the qualitative study showed that adoption of electronic instructional media differed from department to department and from faculty to faculty. Academics were also found to have a positive attitude towards adoption of electronic instructional media. Butler and Sellbom (2002) argue that the extent to which academics are able to accommodate the use of electronic instructional media in teaching would depend greatly on the ability to use various hardware and software. But in the view of Chizmar and Williams, (2001), academics should learn how to use new and emerging and should also know how to effectively incorporate technology into teaching. Bennett and Bennett (2003) found that training programmes are often the main vehicles for promoting technology adoption and use in teaching and learning. Samarawickrema and Stacey (2007), in a large multi- campus urban Australian university, found that university environments were precursors to the extent of adoption and use of technological innovations in teaching among academics. It is worth noting, however, that individual development also influences adoption and use of technology in teaching among academics.

6.3.3 Use of Electronic Instructional Media by Academics

This section discusses usage level and purpose of use of electronic instructional media adopted by academics (see section 5.4.1.3 for details).

The frequent usage of personal computer, multimedia projector and printer confirmed the findings of earlier studies. Isleem (2003) found that use of personal computer was common

in Ohio. Hariri and Roberts (2015) found that personal computers and projectors were being used by academics in selected universities in the UK. In the context of Dutch universities in the Netherlands, Admiraal, Lockhorst, Smit and Weijers (2013) also found computers as the most commonly used electronic instructional media. Referring to innovative uses of electronic instructional media in teaching, Hariri and Roberts lamented that university academics were not innovative in using technology to teach. Halidu (2014) reported that the committee on Needs Assessment of Nigerian Public Universities in 2012 found that less than 20% of Nigerian academics use interactive whiteboards, universities that have deployed interactive whiteboards used them in less than 10% of their lecture sessions because the Internet could be epileptic and slow.

As regards the use of software, the finding of this current study agrees with that of Muhametjanova (2014) who found that the most frequently used software by academics at the Manas University in Turkey were Microsoft Word and presentation software. Other studies at the University of Calgary and the University of Alberta in Canada (Jacobsen, 1998), Puerto Rican University (Lamboy and Bucker, 2003), Mississippi State University (Lee, 1998), Turkish University (Odabasi, 2000) and Sultan Qaboos University (Al-Senaiddi, 2009) in Oman are also in congruence with the findings of this study, where the use of Microsoft Word has been found to be the most popular software among academics. The reason could be because Microsoft Word and PowerPoint are commonly used by academics to prepare lecture material in advance (Mock, 2004). Mushi (2010) did a similar study among academics and postgraduate students at the University of KwaZulu-Natal and discovered that various hardware and software were available for teaching and learning. The study found that academics used computers, projectors, scanners, printers, digital camera and mobile or cell phone for teaching. The study further found that all academics (100%) used word processing, 88.7% of academics used presentation software, and 84.9% of them used the Internet. Vannatta (2000) also found that academics were more comfortable using word processing, e-mail and the Internet. Barrette (2015) found that academics used Microsoft Word, internet browsers, e-mail, LMS (Blackboard) and PowerPoint. They also found that academics had diverse familiarity and technical proficiency in using these electronic instructional media.

As regards the use of e-resources, the current study found that the most frequently used electronic instructional media by academics for teaching purposes were the Internet, e-mail,

e- journals and e-books. This finding agrees with that of Egberongbe (2011) who found that the majority of academics preferred to use e-journals, e-mail and the Internet. The study concluded that academics were dependent on e-resources to get desired and relevant information. The information obtained from these e-resources was useful to academics in preparing lecture notes or engaging in scholarly research. Sahin and Thompson (2006) at Anatolian University in Turkey found that academics used the Internet and e-mail more than any other electronic resource. In India, Chandran (2013) found e-journals and e-databases as the most widely used electronic resources by academics at the Siva Institute of Frontier Technology, a school affiliated with Anna University.

Another related study conducted in India by Sivasubramaniyan and Sadik Batcha (2012) found that the use of e-resources was very common among academics at Pondicherry University. Gayathri and Sadik (2015) pointed that academics depend on institutional library for e-resources, with 30% of academics accessing e-resources daily and 84% of academics using e-resources for lecture notes. Bashorun, Isah and Adisa (2011) at the University of Ilorin, Nigeria, found that online databases were the most widely used e-resource among academics. This was followed by e-journals, the Internet and electronic mail. However, the use of e-books was less important to academics because e-books are difficult to download. The study also found out that the frequency of use of e-resources was higher in the faculty of Sciences and Communication and Information Sciences (CIS) than in other faculties. Academics from the faculty of Business and Social Sciences were found to use e-resources more frequently than those in the Faculty of Arts. Furthermore, academics from the faculty of Engineering and Technology reported lesser usage of e-resources. In order to enhance the use of e-resources among academics, Ocholla (1996) recommended that the library should promote the use of electronic resources among academics through liaison programmes, user education and use of marketing strategies.

Lewis, Fretwell, Ryan and Parham (2013) surveyed business faculty members at a southeastern university in the United States and found that 48% of academics used the LMS on average, and 86% of academics never used social networking sites such as Facebook, Twitter and LinkedIn. According to Lewis et al. (2013), the use of social media is rising globally, with Facebook having the greatest number of active users. Despite the penetration of social media worldwide, findings by Lewis et al. (2013), Guy (2012), Tiryakioglu and

Erzurum (2011), Bryer and Chen (2010), Mushi (2010) and this current study are strong indications that the use of social networking sites among academics for teaching is not common. This was also confirmed by the findings of Al-Senaidi (2009) in Sultan Qaboos University (SQU), Oman, where academics were found to rarely use social media tools. However, use of social networking sites were beneficial to teaching because it allowed connection with students digitally, whilst providing a multi-sensory learning environment (Lewis et al., 2013; Junco, Heiberger and Loken, 2011) and enabling academics to connect with colleagues either through the use of Facebook, LinkedIn or Academia.edu (Gruzd, Staves and Wilk, 2012). According to Kukulska-Hulme (2012), social media and mobile phones are de facto resources for teaching and learning. This is because students can download e-resources (such as e-books and e-journals) and read either online or offline. For reasons such as these, Lewis et al. (2013) argued that social networking sites such as Facebook, Twitter and LinkedIn should be included in the existing LMS to reinforce and strengthen the learning process.

Bates (2000) posits that motivation is central to the decision of academics to learn, adopt and use electronic instructional media in teaching and learning. Gautreau (2011), in a study on identifying what motivates academics to adopt LMS as part of face-to-face teaching or online courses was premised on motivation theory, diffusion of innovation and change theory. The study was conducted among 42 academics, representing 87% of the total number of academics at the College of Communication in Southern California. Gautreau's study showed that a relationship exists between motivating factors and adoption of Learning Management System (LMS). The study discovered that prominent factors that motivate academics to use LMS were salary, responsibility and achievement. This then implies that when designing programmes for academics on the use of electronic instructional media, motivational attributes that promote responsibility, recognise the achievements of academics who participate and award salary stipend for individual efforts should be incorporated (Gautreau, 2011). From the foregoing, one of the strategies for overcoming the low level of use of electronic instructional media like LMS, Turnitin and social networking sites such as Twitter, Blog and Wikis is through motivation, training, exposure, awareness and an enabling environment (Bates, 2000; Gautreau, 2011).

Akuegwu, Ntukidem and Jaja (2011) found that academics in both developed and developing nations now use electronic instructional media for the purposes of teaching and learning. In contrast, Sharma (2003) observed that developing countries have a significantly lower rate of adoption and use of electronic instructional media compared to developed countries. This disparity could be explained by the fact that in developing countries academics have limited training. There exists a low level of digital literacy and thus the digital divide that exists between a highly technologically-driven country such as the United States and a developing nation like Nigeria (Jenkins, Mimbs and Kitchel, 2009). Similarly, the extent of adoption and frequency of use of technology in teaching and learning between developed countries and their developing counterparts vary, with developed countries having a high adoption and user rate.

The variation in the level of adoption and use could be attributed to, amongst other factors, one university having more financial resources to provide, make accessible or facilitate the use of electronic instructional media than another. Sharma (2003) and Mumtaz (2000) found that financial resources were great impediments to the adoption and use of electronic instructional media. Twinomujuni (2011), using a self-administered questionnaire on 60 academics and 173 students and interviews with 20 management staff from four institutions in Uganda, reported that universities in Uganda were hindered by the high cost of hardware and software. Similarly in Iran, Ensafi, Zamiri and Kahani (2007) reported a lack of government budget for equipping universities with hardware and software. According to Hood (2002), adoption and use of technology is sometimes tied to motivation, which could be in the form of incentives or effective implementation of ICT policies (Grant and Meadows, 2002).

As regards the purpose for which academics use each category of electronic instructional media in the university, the details can be found in Appendix 10. Core findings reveal that majority of academics used personal computer, scanner, printer, Microsoft Word, the Internet, web resources, e-databases, e-journals and YouTube to prepare lecture notes. Largely, multimedia projector and PowerPoint were used for lecture presentation. Also, printer was used to produce assignments/course. Spreadsheet packages such as Microsoft Excel were used for data analysis and students' results processing. Findings further showed that the plagiarism software (Turnitin) was used for checking similarity of texts among

students' work. Furthermore, mobile phones, mobile devices, the Internet, e-mail and Facebook were used for communication purposes with students and colleagues. In addition, e-mail was also used for the submission of assignments, research essays, theses and term papers. The results concur with Mushi's (2010), who found that majority of academics used electronic instructional media for making presentations, for preparing lecture notes and for communication with students and colleagues. Further findings revealed that electronic instructional media were used for handout and for accessing online technologies. However, majority of academics did not use electronic instructional media for interactive teaching, creating course website or online forum for students, blogging, online learning and teleconferencing and for their students to turn in assignment, thesis or research essays.

The disparity between the types, extent of adoption, frequency of use and purpose for which academics use electronic instructional media in Nigeria and what obtains with their contemporaries in Europe, America and South Africa could be attributed to weak infrastructure, financial constraints and lack of access to electronic instructional media (Archibong and Effiom, 2009). Other scholars found inadequate ICT facilities, excess teaching workload, poor funding and lack of trained academic staff as constraints to the use of instructional media (Akinola, Liverpool and Marut, 2012; Archibong, Ogbiji and Anijaobi-Idem, 2010). Additionally, Falana (2015) found other impediments to electronic instructional media adoption and use to include high cost of hardware, low bandwidth, high import tariffs, inability of institutions to provide well-equipped e-learning centres, limited time to develop and maintain a course website or communicate with the students via the Internet and mailing system or the course forum.

Akinola, Liverpool and Marut (2012) proposed a framework for achieving milestone breakthroughs in technology adoption and use in universities. The authors submit that there should be inter-institutional collaboration, by which universities would partner with captains of industries and other educational institutions. For example, the University of Jos, Nigeria, made a giant stride in the use of electronic instructional media through the 1998-2003 strategic plans. This initiative enabled the university to seek for partnership with Carnegie Corporation in order to address some of the identified constraints such as funding, gender equity and staff development.

Sam (2011) argues that that the use of electronic instructional media in teaching and learning is a logical and strategic approach that would bring about technological transformation in university education. Quaye, Ametepe and Annan (2015) found a relationship between the use of electronic instructional media (such as LMS, projectors, computers, interactive whiteboards) and teaching. They noted that the use of electronic instructional media should enhance the quality of teaching and learning. Kwache (2007) argues that adoption and use of electronic instructional media will make universities more efficient, productive and provide education to students both on campus and off campus. For academics to make use of electronic instructional media to teach in a more feasible manner, challenges such as the cost of hardware, erratic electricity supply and the attitude of management need to be overcome. Mutula (as cited in Kwache, 2007) argues that an effective, legal, regulatory and policy framework is needed for universities to witness effective use of electronic instructional media in teaching.

The adoption and use of electronic instructional media in teaching and learning is also tied to culture. Scholars (Curry and Moore, 2003; Myers and Tan, 2002) found that culture has an impact on individual decisions to adopt and use technology. Towndrow, Silber and Albright (2009) affirm that organisational culture would either facilitate or hinder the adoption and use of technology in teaching and learning. Therefore, the success or failure of technology adoption and use in universities depends on organisational culture (Bates, 2009; Martins and Terblanche, 2003; Fullan, 2001; Creemers, 2002). This is also in line with Zhu (2015), who stated that organisational culture has a strong influence on attitudes towards technology adoption and use. Drent and Meelissen (2008) submit that organisational culture is an antecedent of technology adoption and use.

6.3.4 Behavioural Intention of Academics on the Adoption and Use of Electronic Instructional Media

This section focuses on the behavioural intention of academics to adopt and use electronic instructional media. On a five point likert scale, respondents rated all the items on behavioural intention well above four points. This finding is an indication of a good behavioural intention, implying that academics have a positive attitude towards the adoption and use of electronic instructional media in teaching. Davis (1986), Ajzen and Fishbein (1980) and Fishbein and Ajzen (1975) found that behavioural intention is jointly determined

by the person's attitude and subjective norms. Behavioural intention has also been described as attitude (DeLone and Mclean, 2003) or readiness to use technology in teaching (Harari and Roberts, 2015). Moreover, attitude has been found to have a strong impact on technology use (Arekete, Ifinedo and Akinnuwesi, 2014). This finding is supported by previous studies (Alharbi and Drew, 2014; Asiri, Mahmud, Abu-Bakar and Ayub, 2012; Ball and Levy, 2008), where academics were found to intend to use electronic instructional media, particularly the LMS, in teaching.

The intention to accept and use electronic instructional media by the academics depends on different factors including the understanding that electronic instructional media is useful and not difficult to use (Oye, Iahad and Ab.Rahim, 2012c). Previous studies reported that behavioural intention will determine frequency of use (Dansarki, Ayub and Kadir, 2015; Oye, Iahad and Rahim, 2012d; Cheung, Lee and Chen, 2002); the extent of use (Dansarki, Ayub and Kadir, 2015; Oye, Iahad and Rahim, 2012d); willingness and the consistency with which electronic instructional media are expected to be used (Oye, Iahad and Rahim, 2012) and use behaviour (Venkatesh, et al., 2003). This implies that behavioural intention is the core measure of technology acceptance in UTAUT, TAM, TPB and other related technology adoption and use- based models (Pynoo and van Braak, 2014).

Oye, Salleh and Iahad (2011) in a pilot at the University of Jos, Plateau State, Nigeria, using TAM and UTAUT, sought to understand academics' behavioral intention towards the acceptance and use of the technology. One hundred questionnaires were administered and collected. The study found that behavioural intention had a mean of 3.31. The authors submitted that if academics' intention was to use technology, then they will likely do so, as intention is a good predictor of usage. Nonetheless, technology adoption becomes profitable if it is accepted and used (Venkatesh and Smith, 1999); otherwise, it is abandoned. This implies that the higher the intention to adopt and use electronic instructional media the more likely the actual use (Ajzen, 1991). This then suggests that if academics derive satisfaction from the use of electronic instructional media in teaching, the resultant effect will be positive and behavioural intention to use electronic instructional media will be on an upward path.

To successfully phase out the use of traditional teaching methods in universities, Boe, Gulbradsen and Sorebo (2015) argue that top university management need to stimulate

academics so as to increase the use of electronic instructional media in teaching and learning. Using Principal Agency Theory (PAT) and Information Systems Continuance Theory (ISCT), Boe, Gulbrandsen and Sorebo studied how university management can motivate academics to increase the use of technology in teaching in Norwegian University College in 2011. The study found that in Norwegian University College, the focus has been on the use of e-learning for the past ten years, where the use of technology is voluntary. Findings showed that managerial influence through incentive is a strong predictor of continued use. In sum, academics can be encouraged to adopt and use electronic instructional media in teaching through the provision of incentives.

6.3.5 Trialability of Electronic Instructional Media among Academics

The other aspect of the research question was to examine the trialability of electronic instructional media among academics. From the analysis of results on trialability as presented in Table 5.9, it can be inferred that academics in the selected universities for this study preferred to experiment with technology before adoption and use in teaching. Bennett and Bennett (2003) assert that trialability is the degree to which academics can test the technology before deciding whether to adopt and use it or not. Therefore, findings of this study suggest that academics would prefer to try out/experiment with technology before its final adoption and use in teaching. This view is supported by the investigation of Mohamad Hsbollah, Kamil and Idris (2009) and Martins, Steil and Todesco (2004). In general, this study and other similar studies agree that trialability is one of the most significant factors influencing the adoption and use of electronic instructional media among academics. Moore and Benbasat (1991) argued for the importance of trying out electronic instructional media before fully adopting and using them because trialability is analogous to partial adoption (Etsebeth, 2012), and it has been shown to have a positive relationship with behavioural intention (Lee, 2007). Trialability can also accelerate the adoption process because, where trialability is allowed, problems associated with technology use can be discovered and solved in time (Perkins, 2011).

The corresponding hypothesis to research question one was hypothesis 3, which states that there is no significant relationship between behavioural intention and adoption and use of electronic instructional media. Findings of the hypothesis testing revealed that there was a significant relationship between behavioural intention and adoption and use of electronic

instructional media for teaching purposes [$F(1, 213) = 19.999, p < .05$]. The results revealed that the independent variable (behavioural intention) and adoption and use of electronic instructional media were positively correlated ($R=0.293$), with behavioural intention capable of explaining 8.6% of the variance in the adoption and use of electronic instructional media in teaching among academics ($R^2 = 0.086$). Therefore, the relationship between behavioural intention to adopt electronic instructional media among academics in the universities studied for teaching purposes proved both positive and significant as reflected in the study. This finding agrees with the findings of early scholars such as Davis et al. (1989); Taylor and Todd (1995); Venkatesh and Davis (2000) and Rana (2013). The finding is also consistent with underlying technology adoption theories such as TAM, Theory of Planned Behaviour (TPB), Theory of Reasoned Action (TRA) as well as UTAUT. This result can be explained based on the veracity that behavioural intention is a measure of the strength of one's intention to perform a specified task (Tella, 2013).

Extant literature posits that the successful adoption of technology in educational settings is determined by behavioural intention because academics are the ones who will eventually determine the success or failure of the information system (Teo, 2011; Kersaint, 2003). In essence, it is important to understand the behavioural intention of academics prior to the adoption or actual use of technology in teaching. Using behavioural intention to determine technology adoption and use can illuminate on academics' frequency of use and duration of use (Cheung, Lee and Chen, 2002) as well as the extent of use (Oye, Iahad and Rahim, 2012a). In this study, behavioural intention has been found to predict both adoption and use. This implies that any factor that influences behavioural intention will also serve as a precursor of technology adoption and use.

The ongoing discourse in the UK and US by the Association of American Colleges and Universities (AACU, 2009) and Higher Education Funding Council for England (HEFCE, 2010), respectively, reflects on what academics are doing to creatively and thoughtfully respond to the changing landscape in teaching and learning. Universities are, therefore, challenged to look for innovative ways to develop academics' capabilities in the use of technology in teaching (Cariaga-Lo, Worthy Dawkins, Enger, Schotter and Spence, 2010). Some of the innovative ways through which universities can help academics to be more versatile in the use of diverse electronic instructional media such as the LMS and others are

found in the propositions of Kukulsa-Hulme (2012) on faculty development at the Open University, UK. The study of Kukulsa-Hulme was on mobile learning. The propositions made on faculty development are applicable to all types of electronic instructional media, particularly those that are rarely used or not used by academics, such as the LMS, plagiarism software, Wikis, Blog and Twitter. As identified by Kukulsa-Hulme, professional development for academics can be attained through the creation of events, communities, exploratory spaces and resources. The events can be in the form of annual conferences, with a strong focus on teaching and learning with new technologies, regular technology coffee mornings for discussions of work-in-progress (e.g. new formats for content delivery) or ad-hoc seminars and workshops by visiting academics.

According to Kukulsa-Hulme (2012), universities can also create communities such as an e-learning community on campus. Such communities can then have frequent events and discussions, special interest groups and centres for open resources in education. This group of people can meet on a quarterly basis to network. Kukulsa-Hulme suggested that libraries could have digital labs to inspire and support academics in the development of new learning materials.

6.4 Factors Influencing Adoption and Use of Electronic Instructional Media

The second research question of this study sought to determine the factors influencing adoption and use of electronic instructional media among academics in selected universities in South West Nigeria. In addressing this question, the researcher was guided by seven factors: performance expectancy, effort expectancy, social influence, facilitating conditions, compatibility, trialability and observability derived from UTAUT and DOI. Two corresponding hypotheses that relate to this question were also developed. The first hypothesis states that there is no significant relationship between the DOI construct (compatibility, trialability, observability) and adoption and use of electronic instructional media. The second hypothesis states there is no significant relationship between the four main constructs of UTAUT and behavioural intention.

The findings showed that facilitating conditions and effort expectancy are the best predictors of adoption and use of electronic instructional media among academics for teaching purposes. The results further revealed that facilitating conditions and effort expectancy $F(1, 212) =$

20.212 $p < 0.05$ jointly accounted for 16.0% variability in the adoption and use of electronic instructional media by academics in the universities studied. Findings further revealed that the combination of facilitating condition and effort expectancy significantly predict adoption and use of electronic instructional media. As revealed by the interview, infrastructural support was noted as the most important factor influencing the adoption and use of electronic instructional media. One of the respondents submits that if the infrastructure is available, academics who do not want to use electronic instructional media would be left behind. The reason for this finding could be attributed to the fact that infrastructure is not an issue in developed countries (Yaquab, Bello, Adenuga and Ogundeji, 2013), unlike in developing countries such as Nigeria where this study was carried out. This finding is consistent with that of Maina and Nzuki (2015), who affirmed that the adoption and use of electronic instructional media is influenced by enabling facilities and conditions.

The study results concur with those of Joji, Abdul-Mumin and Ismail (2012), who discovered that facilitating conditions and effort expectancy were the factors that predict academic staff acceptance of e-learning in Maiduguri, Nigeria. The findings of the current study also agree with that of Kocaleva, Stojanovic and Zdravev (2015). In Goce Delcev University, Kocaleva, Stojanovic and Zdravev (2015) used a modified Unified Theory of Acceptance and Use of Technology (UTAUT) as the theoretical lens to examine acceptance and use of e-learning among academics. Seven factors were considered, with four of them arising from the UTAUT. A total of 92 academics participated in the survey. Findings of this research showed that among the seven UTAUT factors, effort expectancy (86.4%) and facilitating conditions had the strongest effect (79.62%) on adoption and use of a technology. The authors conclude that the most influential factors for the acceptance and use of electronic instructional media are effort expectancy and facilitating conditions. However, their finding contradict that of Oye and Iahad (2009), who in a pilot study conducted at the University of Jos, Nigeria, found performance expectancy as the most influential factor for acceptance and use of electronic instructional media. In addition, Agbonlahor (2006) examined the motivation for the use of Information Technology among academics in Nigerian universities. The study found that perceived usefulness (performance expectancy) and perceived ease of use (effort expectancy) significantly influenced the use of electronic instructional media among academics. Conversely, ease of use (effort expectancy) was found to be a stronger motivator for the use of electronic instructional media than perceived usefulness. The dissimilarity

between the finding of the present study and previous research (such as Oye and Iahad, 2009; Agbonlahor, 2006) could be because academics now have stronger expectations of their institutions in terms of provision of a conducive environment that will make teaching a pleasurable task. This finding also implies that academics are no longer in doubt concerning the benefit of using technology in teaching.

Facilitating conditions represent organisational support for the use of technology or a new innovation (Venkatesh and Bala, 2008). Evidence from scholars such as San Martin and Herrero (2012), Abu-Shanab, Pearson and Setterstrom (2010) and Eckhardt, Laumer and Weitzel (2009) shows that when academics feel that they are well supported in a variety of ways, they will be more inclined to use the system. For instance, if academics are provided with online tutorial on the use of MOODLE and support from the centre for information technology of each institution, the rate of adoption and use of electronic instructional media will be enhanced. Corroborating this, Mourad (2012) noted that facilitating conditions that are indispensable for the adoption and use of electronic instructional media include technical assistance, system support, inter-operability, external competition, internal organisational needs and culture. This was also confirmed from the qualitative aspect of this current study. Interviewees noted that facilitating conditions that are necessary for technology adoption include 24-hour electricity available seven days a week, regular training, campus-wide internet connectivity, adequate bandwidth, technical support, availability and accessibility to electronic instructional media and culture. The interview report shows that, right from inception, one of the universities surveyed had a culture of using exclusively electronic instructional media for teaching purposes. The culture of having an ICT driven university was initiated by the university chancellor of this institution. Chatterjee, Patina and Sambamurthy (2002) argue that organisational support is one of the most imperative factors that contribute to the success of any information system. At the Curtin University of Technology in Australia, Yang (2008) observed that academics that experienced high organisational support had a favourable disposition towards the adoption and use of electronic instructional media for teaching.

Previous studies (Chen, 2011; Liao and Lu, 2008; Xu and Wang, 2006; Hardgrave, Davis and Riemenschneider, 2003) identified facilitating conditions as compatibility and posit that compatibility is an important predictor of information system acceptance. Chen (2011)

enthused that in educational settings, compatibility plays a major role in influencing behaviour towards technology adoption and use. Harari and Roberts (2015) found that trialability had a high loading with facilitating conditions. Kee et al. (2012) noted that only observability had no significant relationship with adoption, but relative advantage ($\beta = .227, p = .000$), compatibility ($\beta = .180, p = .001$) and trialability ($\beta = .134, p = .006$) significantly predicted the adoption of electronic instructional media in Malaysia. Almobarraz (2007) conducted a study on internet adoption among academics at a pioneering university in Saudi Arabia, using Diffusion of Innovation theory. The study examined the influence of eight attributes of DOI based on eleven research questions. One of the questions determined the influence of trialability on internet adoption. Findings showed that trialability is statistically a significant predictor of internet adoption ($p = .006 < .05$). The R^2 value was = 0.040, meaning that the trialability variable explains 4% of variance in predicting internet adoption.

Consequent upon this, Maina and Nzuki (2015) examined the influence of performance expectancy, effort expectancy, social influence and facilitating conditions on the acceptance of E-learning Management System (EMS) in Kenya. The aim of the study was to empirically investigate the factors that influence the adoption of E-learning Management System (EMS). Using a self-administered questionnaire, face-to-face interviews and observations on a sample size of 600 people made up of lecturers, students, management staff and technical staff from at least five universities within the Nairobi metropolis, the study revealed that performance expectancy, enabling infrastructure, institutional policies, training support, leadership and ease of effort influenced the adoption of electronic instructional media in institutions of higher learning. In other words, the factors identified by Maina and Nzuki were performance expectancy, facilitating conditions and effort expectancy.

Gatignone and Robertson (1995) submit that one of the problems of technology adoption and use among academics is the uncertainty attached to the innovation. Often times, this uncertainty leads to technology-related anxiety. Yang, Mohamed and Beyerbach (1999) recommend trialability as a major antidote for reducing technology anxiety among academics. The authors posit that trialability is the same as training, and that training relieves stress by first reducing anxiety (Clark and Kalin, 1996). The findings suggest that academics yearn for hands-on experience to try out electronic instructional media prior to lecture encounters with students. There is a slight difference between academics in Nigeria

and their counterparts in Lesotho. As observed by Ntemana and Olatokun (2012), academics do not need to try out the electronic instructional media. The findings of this study suggest that academics would need trial demonstration on the use of electronic instructional media such as LMS, mobile phones and social networking sites.

Rogers (2003) posits that trialability is fundamental to adoption and use of technology because it gives academics the opportunity to learn and practice by doing. The training could be offered by the information technology staff or in partnership with prominent academics that are versatile and knowledgeable in the use of electronic instructional media (Spino, Kahle-Piasecki and Lambert, 2011). The contribution of all these factors, particularly facilitating conditions, effort expectancy and trialability the adoption and use of electronic instructional media suggests that the Nigerian Universities Commission (NUC) and stakeholders in the Nigerian educational system should pay serious attention to these factors. Ntemana and Olatokun (2012) submit that easy-to-use electronic instructional media should be deployed to universities to enhance adoption and use by academics.

Further analysis in the present study indicate that there is a significant relationship between the DOI construct (compatibility, trialability, observability) and the adoption and use of electronic instructional media for teaching purposes. The results reveal that the independent variables (compatibility, trialability and observability) were positively related ($R = 0.254$), though the relationship was weak. The independent variables were found to have jointly accounted for 6.5% of the total variance in the adoption and use of electronic instructional media by academics ($R^2 = 0.065$). The current study also examined the relative contribution of each of the constructs (compatibility, trialability and observability) which were drawn from the DOI on adoption and use of electronic instructional media among academics. Trialability ($\beta = 0.272$ $t = 3.292$ $p < .05$) significantly contribute to the adoption and use of electronic instructional media among academics. Compatibility ($\beta = - 0.023$ $t = - 0.037$ $p > .05$) and observability ($\beta = - 0.043$ $t = - 0.525$ $p > .05$) did not significantly contribute to adoption and use. The results concur with previous studies (Martins, Steil and Todesco, 2004; Kendall, Tung, Chua, Ng and Tan, 2001; Rogers, 1995) which also found trialability to be one of the most important components of adoption and use of technology. These findings imply that trialability and adoption have a positive relationship. However, the findings contradict those of Rellinger (2014) and Keesee (2010), who found that complexity is the

strongest predictor of technology adoption among academics. Hsbollah and Idris (2009) examined factors influencing the adoption of e-learning in Malaysia and found that relative advantage, trialability and academic specialisation positively influenced adoption. In this study, the fact that trialability contributed the highest influence could be because academics place a higher premium on experimenting with technology before its actual use.

Other studies (Rellinger, 2014; Kee, Omar and Mohamed, 2012; Almobarraz, 2007) have demonstrated the contribution of trialability to technology adoption and use in the educational context. Rellinger (2014) in a study on the diffusion of smartphones and tablets among academics and students in Liberal Arts University demonstrated that relative advantage, trialability and influences were significant predictors of technology adoption. The correlation coefficients showed that relative advantage (0.883) was the strongest predictor, followed by trialability (0.669) and influences (0.658). Therefore, these findings suggest that Rogers' diffusion of innovation theory elucidates factors responsible for individual adoption and use of technology. This study in particular has demonstrated that Rogers' attributes of innovation (compatibility, trialability, observability) do not only predict technology adoption and use, but a positive relationship exists among these constructs and the adoption and use of electronic instructional media for teaching purposes. The second hypothesis testing of this current study, which is also related to this question, revealed that performance expectancy, effort expectancy, social influence and facilitating conditions jointly accounted for 54.6% of the total variance in behavioural intention to adopt and use electronic instructional media by academics for teaching purposes ($R^2 = 0.546$). This result implies that performance expectancy, effort expectancy, social influence and facilitating conditions are capable of explaining 54.6% of the variance in the behavioural intention of academics to adopt and use electronic instructional media in teaching. This finding is supported by Oye, Iahad and Ab Rahim (2012a), who found that the four constructs of UTAUT had significant positive influence on the behavioural intention of the Adamawa State University academic staff to accept and use electronic instructional media. However, facilitating conditions were found not to make any significant contribution to behavioural intention when PE, EE and SI were present. This upholds previous findings of Venkatesh et al. (2003: 454) that when PE, EE and SI constructs are present, facilitating conditions become non-significant in predicting behavioural intention.

Previous studies reveal a number of variables as factors influencing behavioural intention. For example, scholars (San Martin and Herrero, 2012; Abu-Shanab, Pearson and Setterstrom, 2010; Eckhardt, Laumer and Weitzel, 2009; Keller, 2009; Bandyopadhyay and Fraccastoro, 2007; Venkatesh et al., 2003) elucidate that performance expectancy is the most significant factor in explaining behavioural intention, particularly in a university setting. They reported a high positive correlation between performance expectancy and behavioural intention. Effort expectancy has also been found to have a positive relationship with behavioural intention (Venkatesh et al., 2003; Thompson, Higgins and Howel, 1991). According to Venkatesh et al. (2003), the relationship between effort expectancy and behavioural intention is such that users will initially feel that there are some obstacles related to the use of electronic instructional media in the early stages, but as time goes on academics will perceive electronic instructional media as being easy to use based on its features and prior familiarity with the use (Brown, Dennis and Venkatesh, 2010). Others (Venkatesh and Davis, 2000; Moore and Benbasat, 1991; Thompson, Higgins and Howell, 1991) observe that social influence is significant in shaping an individual's intention to use technology. However, Kocaleva et al. (2015) note that social influence and facilitating conditions have the strongest correlation with behavioural intention.

Venkatesh and Davis (2000) report a positive effect between facilitating conditions and behavioural intention. Alrawashdeh, Muhairat and Alqatawnah (2012) found performance expectancy, effort expectancy, social influence and facilitating conditions as factors predicting behavioural intention. Macharia (2011) found a correlation between social influence, effort expectancy, performance expectancy and behavioral intention among academics in East Africa. Macharia's study revealed that social influence had the strongest path coefficient, followed by effort expectancy and then performance expectancy. Oye, Iahad, Rahim and Zairah (2012), using the UTAUT model to understand the behavioural intention of academics in Adamawa State University (ADSU) and Lagos State University (LASU), Nigeria, found that the most influential predictors were effort expectancy and performance expectancy, respectively. At the University of Port Harcourt, Nigeria, Iahad, Rahim, Zairah and Oye (2012) found effort expectancy (EE) to be the most influential construct in predicting behavioural intention of academics.

This current study, like that of Teo (2011) in Singapore, tested the influence of facilitating conditions together with other UTAUT constructs on behavioural intention, unlike some other studies that determined the direct influence of facilitating conditions on actual use. The study scrutinised the factors that explained behavioural intention to use technology, taking into consideration five variables: perceived usefulness, perceived ease of use, subjective norm, facilitating conditions, and attitude towards use on behavioural intention to use technology. The study found that perceived usefulness, perceived ease of use and facilitating conditions influenced behavioural intention to use technology. Facilitating conditions were not initially proposed as direct determinants of behavioural intention in UTAUT because the core concepts in the constructs were largely taken care of by effort expectancy (Venkatesh, et al., 2003). Preceding technology adoption theories such as MPCU, TPB and DTPB proposed that facilitating condition is a direct determinant of behavioural intention to use technology (Abubakar and Ahmad, 2013).

Teo (2011) reported that facilitating conditions exert both direct and indirect influence on behavioural intention to use technology through effort expectancy in UTAUT and perceived ease of use in TAM. Therefore, where technical support is available, the overall perception of academics on the adoption and use of electronic instructional media is that it is relatively free from effort and this could strengthen intention to use technology in teaching. This study revealed that the combination of performance expectancy, effort expectancy, social influence and facilitating conditions significantly predicts behavioural intention to adopt and use electronic instructional media.

From the foregoing discussion, it can then be said unequivocally that many factors influence adoption and use of electronic instructional media. In order of importance, the study found these factors to be facilitating conditions: effort expectancy, trialability and behavioural intention. The study found that performance expectancy, effort expectancy and social influence significantly predicted behavioural intention of academics to adopt and use electronic instructional media. Therefore, in this era of globalisation, the necessary infrastructure and conditions that promote the use of electronic instructional media in universities should be given precedence. Venkatesh, Thong, Chan, Hu and Brown (2011) observe that where facilitating conditions are insufficient, they may act as an inhibitor. In other words, academics could develop or exhibit negative attitudes towards the situation.

Where facilitating conditions are prominent, academics would have no reason not to engage in the adoption of electronic instructional media in teaching (Venkatesh et al., 2011).

Therefore, as identified in the qualitative aspect of this study, facilitating conditions such as adequate bandwidth, steady power/electricity supply, technical support, institutional policy that drives the adoption and use of technology, capacity building programmes, ICT policy, training and budgetary allocation for the acquisition and installation of electronic instructional media should be provided in every academe. Results from the qualitative study also revealed that organisational culture is one of the factors influencing the adoption and use of electronic media in teaching by academics. The interview results also showed that the library has a critical role to play in facilitating adoption and use of electronic instructional media. The library can play pivotal role in facilitating adoption and use of electronic instructional media among academics as follows:

- educate and create awareness and facilitate access to some if not all the electronic instructional media;
- enlighten academics on e-learning platforms and institutional repositories;
- ensure that both academics and students have 24/7 access to electronic instructional media, particularly from the library portal;
- float workshops and seminars for various colleges/faculties;
- serve as a centre that drives the adoption and use of electronic instructional media.

6.5 Influence of Media Literacy Skills on Adoption and Use of Electronic Instructional Media

The third research question sought information on the relationship between media literacy skills of academics and adoption and use of electronic instructional media. The purpose of this research question, as shown in Section E of the survey questionnaire (see Appendix 1), was for academics to assess individual competency on the use of electronic instructional media. The results in Table 5.18 show a regression analysis of the relationship between media literacy skills and adoption and use of electronic instructional media. The results suggest a significant relationship between media literacy skills and the adoption and use of electronic instructional media { $F(1,213) = 19.423, p < .05$ }.}

The results also revealed a positive relationship ($R = 0.289$) between media literacy skills and the adoption and use of electronic instructional media. The variable media literacy skills accounted for 7.9% of the total variance in the adoption and use of electronic instructional media ($R^2 = 0.079$). Therefore media literacy skills have a role to play in the adoption and use of electronic instructional media. The results also revealed that media literacy skills and adoption and use of electronic instructional media were positively related ($R = 0.289$) though the relationship was weak. The results of this finding are an indication that if the media literacy skills of academics increase, the adoption and use of electronic instructional media will increase and vice-versa.

This finding is in concurrence with that of Mac Callum, Jeffrey and Kinshuk (2014a); Hassan and Ahmed (2010); Hassan (2003) and Potosky (2002). These scholars opine that media literacy skills have been consistently reported in literature to have a positive relationship with technology adoption and use. However, the media literacy skills of academics differ depending on level of education, experience, exposure to professional courses and craving to possess such skills (Buarki, 2015). The author points that academics require media/digital literacy skills for executing teaching duties such as preparing students' reports, grading, presentations, lecturing, research, communication between academics and students and for flexibility in learning and interaction.

Scholars (Alghazo, 2006; Sahin and Thompson, 2006) report that academics in the developing countries lack many technological skills. Reacting to this, Al-Senaidi (2009) found out that the overall level of media literacy skills for SQU faculty members was close to intermediate. The level of media literacy skills was found to be the most important predictor of technology adoption and use. Babić (2012) found out that media literacy skills influenced academics' behaviour, attitude and self-efficacy. The author concludes that media literacy should be considered a main prerequisite for the adoption and use of electronic instructional media. This is because academics who are media literate are more likely to experiment with hardware and software that could facilitate teaching and learning.

Tsvere, Swamy and Nyaruwata (2013) examined media/digital literacy skills among full-time university academics in Zimbabwe, using a quantitative descriptive research design. A simple random sample of 440 full-time university academics responded to a structured questionnaire.

Findings revealed a significant relationship between university academics' media/digital literacy skills and their gender and experience in using electronic instructional media. The study revealed that male academics perceived themselves as more competent than female academics. The study also found a significant inverse relationship between media/digital skills and age of respondents. The findings led to the conclusion that university academics were fairly competent in using electronic instructional media and the scholars concluded that top university management should make the use of electronic instructional media a priority.

Wario (2014), at the QwaQwa campus of the University of the Free State in South Africa, found that computer skills (in other words media or digital literacy skills) influence the use of electronic instructional media. Wario recommended that institutions should support academics to acquire adequate skills and knowledge that can promote adoption and use of electronic instructional media in teaching. Corroborating this submission, Andoh, (2012) posits that for academics to be competent in the use of electronic instructional media there is a need to desist from organising ICT training for academics. Rather, the emphasis should be on developing the technological competence of academics in order to use electronic instructional media in teaching. On this note, Prestride (2012) highlighted some of the digital literacy skills required by academics, such as data processing, word processing, use of the Internet, use of spreadsheet packages, use of presentation software like PowerPoint and e-mail.

Mac Callum, Jeffrey and Kinshuk (2014a) found that advanced mobile literacy and basic ICT literacy influenced both perceived ease of use and usefulness. Although this current study did not consider the influence of media literacy skills on performance expectancy and effort expectancy, but from empirical evidences arising from this research and other similar studies, the UTAUT can be extended to include media literacy skills as an additional construct to predict technology use in any contextual setting. Corroborating this assertion, Mac Callum, Jeffrey and Kinshuk (2014a) suggested that technology adoption and use models, such as TAM, should be extended to include media literacy. Therefore, future researchers could seek to validate the UTAUT and TAM to improve on the predictive power of these theories. This current study focused on determining the direct influence of one of the new variables (media literacy), as suggested by Mac Callum, Jeffrey and Kinshuk (2014a), on adoption and use, since behavioural intention has been found to directly influence use. The findings of this current study have similarity with the findings of Isleem (2003), who identified a high

correlation between media literacy skills and technology adoption and use. The study reported a correlation coefficients that was as high as 0.84.

The findings of this current study confirmed a positive relationship between media literacy and technology adoption and use, particularly from contextual settings arising from a developing nation. Therefore this empirical study contributes to the ongoing discourse on the relationship between 21st-century literacy (media literacy, digital literacy or information literacy) and technology adoption and use. Although this study did not categorise media literacy skills as done by Mac Callum and Jeffrey (2014a), reflections on the findings of Mac Callum and Jeffrey point to the fact that top university management staff must constantly make concerted effort on fostering initiatives that are targeted at enhancing media literacy skills of academics. The media literacy skills necessary for academics should include basic ICT literacy and advanced ICT literacy skills like the use of the LMS for face-to-face teaching, blended learning, mobile learning, e-assessment of students, e-invigilation and other possibilities of the future. Bonsu, Duodu and Djang-Fordjour (2013) found that majority of academics (51%) acquired media literacy skills through self-effort, while others (40%) were taught by friends and less than 10% of academics took part in special training courses at Sunyani Polytechnic in Ghana. In the universities, the acquisition of media literacy skills among academics may not be different from what obtains among their counterparts in other higher institutions. This finding could be an indication that top university management need to accept greater responsibility in beefing up the media literacy skills of academics.

Other scholars (Ferrari, 2012; Franklin, 2007) have argued that media literacy is requisite for building the confidence and efficiency of academics in using electronic instructional media for teaching and learning. Franklin (2007) noted that digital literacy of academics is a strong determinant of the level of technology used in teaching. In Europe, a project was launched between January 2011 and December 2012 by JRC-IPTS IS on Digital Competence (DIGCOMP) under an administrative agreement for DG Education and Culture. As part of this project, a report was developed in which Ferrari (2012) enthused that the need for digital competence is beyond possessing technical skills. For this reason, Ferrari proposed a framework for institutions to develop the media literacy competency of academics including:

- Information management skills (ability to identify, locate, access, retrieve, store and organise information);

- Collaboration skills (link with others, participate in online networks and communities, interact constructively);
- Communication and sharing skills (communicate through online tools, taking into account privacy, safety and etiquette skills);
- Creation of content and knowledge (integrate and re-elaborate previous knowledge and content, construct new knowledge);
- Ethics and responsibility (behave in an ethical and responsible way, aware of legal frames);
- Evaluation and problem solving (identify digital needs, solve problems through digital means, assess the information retrieved);
- Technical operations (use technology and media, perform teaching through digital tools).

This framework by Ferrari (2012) highlights the critical areas top university management staff, particularly directors of ICT centres in various universities, should focus on in relation to developing the digital literacy of academics in respect of the specialty. The ICT policy and plans for Nigerian education, as highlighted by Oye, Iahad and Ab.Rahim (2012b), reflects a plan by the Federal Ministry of Education (FME) that by 2020 the education sector would have ICT- driven processes such as examinations management and learning delivery. The FME hopes to achieve a 100% computer literacy rate for secondary and tertiary sectors and a 100% computer literacy rate for teachers across the three tiers of the education system. To achieve this laudable goal, it is imperative for stakeholders in the Nigerian education industry to show more commitment towards media literacy capacity building across the three tiers of education.

6.6 Moderating Effect of Gender, Age and Experience on Adoption and Use of Electronic Instructional Media

The fourth research question sought to determine the moderating effects of gender, age and teaching experience on the relationship between the independent variables (performance expectancy, effort expectancy, social influence, facilitating conditions, compatibility, trialability and observability) and the dependent variable (adoption and use of electronic instructional media). The findings of this study imply that in educational settings, facilitating

conditions are a significant concern for both male and female academics, young and old, irrespective of the teaching experience.

The results of the current study corroborate the findings of researchers such as Curtis et al. (2010), Wang and Wang (2010), Venkatesh et al. (2003) and Venkatesh and Morris (2000), who report that gender played a significant role in moderating the relationships between the psychological constructs (PE, EE, SI, FC) of the UTAUT and technology adoption and use. Similarly, Venkatesh et al. (2003:21) and Venkatesh and Morris (2000) found that gender moderated the relationship between performance expectancy and technology use, with the influence being very strong among men, especially younger men. Wang and Wang (2010) in another study found that gender significantly moderated the relationship between performance expectancy and technology adoption and use. The foregoing study noted that men were more disposed to use technology because of the perceived usefulness of technology in teaching.

In the same vein, other scholars note that effort expectancy was more significant for women than men, especially older women (Cheng, Yu, Huang, Yu, and Yu, 2011; Venkatesh and Morris, 2000). Additionally, Macharia (2011) also found that gender moderated the relationship between technology use and innovative characteristics. Though the study of Venkatesh et al. (2003) was conducted among employees in a business organisation, the finding is considered applicable in educational settings. In the educational setting, gender has been identified as an important factor that influences the behaviour of academics in the use of electronic instructional media. For example, Thompson and Lynch (2003), and Zhou and Xu (2007) observe that male academics were more proficient and confident in the use of technology than female academics. This corresponds with the findings of Spotts, Bowman and Mertz (1997), whose investigation on the use of electronic instructional media among academics in a public university in the Midwestern United States revealed that male academics exhibited greater knowledge and experience than female academics. Nevertheless, female academics rated ease of use and training as the most important factors to them, unlike male academics. Further to this, Cheng et al. (2011), Venkatesh and Morris (2000), Venkatesh et al. (2003) and Venkatesh, Morris and Ackerman (2000) found that women were more influenced by 'important others' than men.

Previous studies of Hora and Holden (2013); Owusu-Ansah (2013); Luan (2005); Spotts, Bowman and Mertz (1997) and Cheek and Arguso (1995) provided justification for gender differences in technology adoption and use studies. Spotts, Bowman and Mertz (1997) found that gender differences existed in equality of access to and performance with technologies, which seem to favour men than women. This finding could be as a result of how men and women learn to use or actually use technology, attitudes, personal experiences (Spotts, Bowman, and Mertz, 1997), pre-existing beliefs and goals, prior experiences and cultural conventions of the disciplines (Hora and Holden, 2013). These prior studies indicated that men were more driven by perceived usefulness, a construct that is similar to performance expectancy, while women were more motivated by perceived ease of use (effort expectancy) and social influence. It may then be inferred that performance is a significant concern for male academics, while female academics will be more concerned about ease of use and the opinions of other people such as their students.

The findings of this present study on the moderating influence of gender on the relationship between the independent variables and adoption and use of electronic instructional media could be explained from the standpoint of Venkatesh and Morris (2000). The authors posit that male and female academics differ in terms of information processing and cognitive structures. It can also be said that men are more pragmatic, task-oriented (Minton and Scheder, 1980), motivated by achievement needs (Hoffman, 1972), self-confident and show a higher level of digital skills than women (Li and Kirkup, 2007). Women, on the other hand, have been reported to be more technophobic and conscious of others' feelings than men (Sun and Zhang, 2006). Although the study of Venkatesh et al. (2003) and other scholars revealed that gender moderated some relationships with performance expectancy, effort expectancy and social influence, it was not so in the current study. The current study revealed that there was no statistically significant interaction of gender on the relationship between performance expectancy, effort expectancy, social influence, compatibility, trialability and observability ($p > 0.05$), and adoption and use of electronic instructional media. Nevertheless, the relationship between facilitating conditions and adoption and use of electronic instructional media was moderated by gender, with a beta value of 0.396, $t(206) = 3.221$, $p = .001$.

This finding is similar to that of Maduku (2015), who sought to ascertain the influence of gender on the determinants of e-book usage intention among students in two public universities and three private colleges in the Gauteng Province of South Africa. The results

suggest that male and female academics have different perceptions of the availability of infrastructure and technical support available to them in the adoption and use of electronic instructional media for teaching. The study has unequivocally revealed the sensitivity of academics to adoption and use of electronic instructional media in teaching. Previous work by Curtis et al. (2010) showed that men scored higher than women based on their perception of facilitating conditions. Corroborating this finding, Maduku (2015) reported that males have different perceptions towards facilitating conditions compared to females.

As revealed in Table 5.19b (section 5.7 of Chapter 5), on the moderating effect of age on the relationship between the independent variables and the dependent variable, the overall interaction of age on the relationship between the independent variables and adoption and use of electronic instructional media was statistically not significant $\{R^2 = 0.015, F(1,205) = 3.862, p = .051, b = 2.731E-011, t(206) = 1.965\}$. The result implies that the relationship between the independent variables and adoption and use of electronic instructional media was not moderated by age. Further findings revealed that the interactive effect of age on the individual relationship between performance expectancy, effort expectancy, social influence, compatibility, trialability and adoption and use of electronic instructional media was not statistically significant ($p > 0.05$). However, the relationship between facilitating conditions and adoption and use of electronic instructional media was moderated by age ($p = 0.001$). These findings are in conformity with the overall submission by Venkatesh et al. (2003) that age moderates the relationship between facilitating conditions and technology adoption and use. Facilitating conditions have been found to be more important to older people than the young ones (Venkatesh, 2000).

Age is a significant factor that describes how people make use of technologies. Morris and Venkatesh (2000) found that younger people tended to be more attracted by performance expectancy and perceived usefulness of a technology than older people. Morris and Venkatesh further reported that effort expectancy was more significant among older people than younger people in technology adoption and use. Also, older people were seen to likely attach more importance to social influence of using a technology. Furthermore, as regards facilitating conditions, older people were more concerned about environmental setup because their way of learning was more passive. Hall and Mansfield (1975) noted that older people attach more importance to facilitating conditions.

In this study, however, a contrary result was obtained, where age was found not to moderate the relationship between the independent variables and the dependent variable. Although Marchewka, Liu and Kostiwa (2007) report that age is a significant moderator in educational settings, it was not so in this current study. The reason for this may be because younger academics are as confident as the older ones in using technology in teaching and learning. Elias, Smith and Barney (2012) associate this optimism exhibited by academics to the complexity construct of the DOI. From this submission, it could be inferred that academics (young and old) who participated in this study possibly perceived that use of electronic instructional media was not complicated. It could also be due to the fact that more young academics (36 - 46 years of age) participated in the study than the older ones. Hawthorn (in Jegede, 2009) observes that the effect of age becomes noticeable from the mid-forties. Also the reason could be due to the environment in which the research was carried out.

This current finding contradicts the findings of previous research such as Venkatesh et al. (2003) and Peeraer and Van Petegem (2010). Venkatesh et al. (2003) note that younger workers were more interested in performance expectancy than older ones, and that the younger the academics the more familiar they are with new technologies and their incorporation into their teaching (Peeraer and Van Petegem, 2010). Also, Venkatesh and Morris (2000) observe that age influenced performance expectancy (perceived usefulness) both in the long and short run. Additionally, Den Hoogen (2010), and Shiau, Hsu and Wang (2009) observe that younger academics possess more advantages of speed, novelty, flexibility and risk taking when it comes to technology adoption and use than older ones. In other words, younger academics are more digitally savvy and could demonstrate novelty and flexibility when it comes to the use of electronic instructional media.

Furthermore, findings of the study on the moderating effect of teaching experience (see Table 5.19c, Section 5.7 of Chapter 5) showed that there existed a significant interaction between teaching experience and the overall relationship between the independent variables and the adoption and use of electronic instructional media ($p = 0.006$). The results also revealed that teaching experience did not moderate the individual relationship between performance expectancy, effort expectancy, social influence, compatibility, trialability, observability and adoption and use of electronic instructional media ($p > 0.05$). However, the

relationship between facilitating conditions and the adoption and use of electronic instructional media was moderated by teaching experience ($p < 0.05$). It can then be deduced that facilitating conditions are a significant concern for academics irrespective of the teaching experience.

Venkatesh et al. (2003) report that experience moderated the effect of effort expectancy, and it was more important to women with less experience. Experience had also been noted to moderate the effect of social influence and was found to be more important, in mandatory settings, to women, especially older women. In the case of facilitating conditions, as experience towards technology increased, impediments towards use will be removed (Bergeron, Rivard and De Serre, 1990). Experience has also been found to moderate effort expectancy, social influence and facilitating conditions. The current study modified the UTAUT model by substituting the constructs of experience with teaching experience. According to Hernandez-Ramos (2005), teaching experience can be regarded as the number of years an academic has been teaching. The author argued that the more the number of years the more the teaching experience, and the less the number of years the less the experience.

Furthermore, in the study of Sadik (2006), the effect of gender and teaching experience, among other variables, was considered in ascertaining the factors influencing teachers' attitudes toward personal use and school use of computers. The study found that teachers who have longer teaching experience tend to appreciate the importance of technology in teaching. Though the study was carried out in a secondary school, the overall finding is applicable to teachers at all levels of education. This therefore suggests that academics with more teaching experience are more likely to appreciate the importance of electronic instructional media than those with less teaching experience. Likewise, Lau and Sim (2008) in a survey of 250 secondary school teachers in Malaysia found that more experienced teachers used electronic instructional media than the less experienced teachers. Previous studies noted that for individuals who have little experience with using technology, effort expectancy will be a significant factor in predicting use. However, as the experience increases, effort expectancy will not exert much effect on behavioural intention and actual use. This suggests that the relationship between social influence and actual use is moderated by experience, such that the effect will be more at early stages and then later fade as people's experiences about the new

technology evolve (Taylor and Todd, 1995). Macharia (2011) found the moderating effect of experience on both effort and performance expectancy to be non-significant.

Armida (2008) reported that most studies using UTAUT examined only a subset of the construct of UTAUT, thereby excluding the moderating factors. However, the present study sought to understand the influence of moderating factors such as gender, age and teaching experience on the relationship between the independent variables (performance expectancy, effort expectancy social influence, facilitating conditions, compatibility, trialability and observability) and adoption and use of electronic instructional media. The reason for examining the influence of the moderators was to enhance the predictive validity of the models underpinning this study (Chin, Marcolin and Newsted, 2003). Additionally, it was also to gain a better understanding of the dynamics of the user technology acceptance phenomenon (Sun and Zhang, 2006) and a possible extension of the technology adoption theories (Faqih and Jaradat, 2015). Gender, age, experience and voluntariness of use have been shown to moderate the relationship between the construct of UTAUT and technology use in various settings.

Venkatesh et al. (2003) found that the effect of these variables (PE, EE, SI, FC) on technology adoption and use is moderated by gender, age, experience and voluntariness of use. This current study added three constructs of DOI (compatibility, trialability and observability) together with the construct of UTAUT to test the strength of the moderating variables in predicting technology adoption and use. The results of the study generally showed that gender and teaching experience moderated the relationship between the independent variables (performance expectancy, effort expectancy, social influence, facilitating conditions and trialability) in predicting the adoption and use of electronic instructional media for teaching purposes. Nevertheless, the current finding further revealed that age did not moderate the relationship between the independent variables (performance expectancy, effort expectancy social influence, facilitating conditions, compatibility, trialability and observability) and the dependent variable (adoption and use of electronic instructional media). Thus, it can be deduced that gender and teaching experience have significant moderating effects on the major factors that determine the adoption and use of electronic instructional media for teaching purposes.

The finding from research question four is a reflection of the sensitivity of academics to adoption and use of electronic instructional media in terms of gender, age and teaching experience. Iniesta-Bonillo, Sánchez-Fernández and Schlesinger (2013) submit that top university management should place emphasis on the preferences and sensitivities of academics by giving credence to gender, age and teaching experience. Relating this to one of the theories underpinning this study, the diffusion of innovation theory specifically does not include demographic factors such as age, gender and experience. This study as well as previous ones (e.g. Chen et al., 2009) are pointers to the need of its expansion to include demographic variables.

The corresponding hypothesis to research question 4 determined the direct influence of demographic variables (gender, age and teaching experience) on adoption and use of electronic instructional media. This hypothetical statement was formulated to ascertain the relationship between demographic factors (gender, age and teaching experience) on the adoption and use of electronic instructional media. Findings revealed that none of the demographic variables {gender ($\beta = - 0.015$), age ($\beta = - 0.038$) and teaching experience ($\beta = - 0.01$) at ($p > 0.05$) had significant relationship with the dependent variable (adoption and use of electronic instructional media). Therefore, this implies that age, gender and teaching experience do not have a direct influence on adoption and use of electronic instructional media. This argument resonates with Venkatesh et al. (2003), who observed that there is no direct influence of gender, age and experience on technology adoption and use. Therefore, this study upholds previous research findings, such as that of Sang, Valcke, van Braak, and Tondeur (2010) who found that gender was not related to the use of electronic instructional media. Jegede (2009) found that age had no significant influence on the use of electronic instructional media.

At the University of Ghana, Legon, Owusu-Ansah (2013) notes that gender did not have a significant relationship with adoption and use of electronic instructional media among academics. Similarly, Onasanya et al. (2010) reported that gender had no effect on the attitudes of academics towards adoption and use of electronic instructional media in teaching. The current study suggests that gender differences in technology adoption and use, particularly in educational settings such as the one where this study was carried out, could be vanishing. This is contrary to Schumacher and Morahan-Martin (2001), who found gender

differences in how males and females used the computer and the Internet. The authors submitted that men and women perceived and used electronic instructional media differently. Despite their conclusion, this current study did not find adoption and use of electronic instructional media to be influenced by gender, perhaps because more males participated in this study than females.

6.7 Challenges of Adoption and Use of Electronic Instructional Media

The fifth research question sought to examine the challenges facing the adoption and use of electronic instructional media by academics in Nigerian universities. To answer this research question, responses to nineteen items in Table 5.20 were used to determine the challenges/obstacles. This current study found the following as major challenges to technology adoption and use: large student population, lack of institutional policy on electronic instructional media adoption and use, lack of training on the use of electronic instructional media, inadequate budgetary allocation for the acquisition and installation of electronic instructional media, lack of technical support, poor culture of using technology for teaching, limited access to electronic instructional media, inadequate support from internal IT staff, ICT anxiety, insufficient time, low bandwidth and lack of support from faculty/subject librarians.

The results from the semi-structured interview revealed that large student population give credence to adoption and use of electronic instructional media. Since one of the purposes of using the qualitative method in research is to seek further clarification on any aspect of the survey, the current study affirms that student population is not a challenge to adoption and use of electronic instructional media. Issues that emerged from the qualitative study included poor infrastructure (low bandwidth, poor electricity supply, fluctuating and poor access to the Internet), lack of train-the-trainer approach, lack of funds, institutional unresponsiveness and thick-skinned approach to technological developments. Contrary to the findings of this study, Ijeoma, Joseph and Franca (2010) observed that the major challenges facing Nigerian academics are inadequate ICT facilities, excess workload and funding.

The findings of this study support evidence of previous scholars on the barriers to technology adoption and use in higher education settings. Broadly, they indicate that academics in all universities face considerable challenges in their effort to use electronic instructional media

in teaching. The challenges facing academics in the adoption and use of electronic instructional media are described as barriers (Rumanyika and Galan, 2015). Examining these challenges, particularly in university education, is of interest to researchers (Al-Senaidia, Lin and Pirota, 2009). Studies (such as Rumanyika and Galan, 2015; Mtebe and Raisamo, 2014; Harvey, 2012; Nihuka and Voogt, 2012; Tedla, 2012; Yonazi, 2012; Issa, Ayodele, Abubakar and Aliyu, 2011; Oye, Iahad and Rabin, 2011; Ijeoma, Joseph and Franca, 2010) have examined factors that inhibit the adoption and use of electronic instructional media in the higher education sector.

First, the major challenge identified by academics who participated in this study was lack of institutional policy on electronic instructional media adoption and use. Majority of academics (56.7%) strongly agreed/agreed that lack of institutional policy on the use of electronic instructional media in teaching and learning was a challenge in the adoption and use of electronic instructional media. This is dissimilar to the findings of Chowdhury (2015), who found infrastructure as the major obstacle. The dissimilarity in the findings could be because of the differences in the terrain where the universities are situated. Altun, Kalayci and Avci (2011) conclude that for academics to adopt and use electronic instructional media in teaching at the departmental, faculty or university level there should be an institutional policy that emphasises ICT use at the departmental, faculty and university levels.

Olatokun and Opesade (2008) recommend that staff and students should be well informed about ICT policies that are in their university and the university ICT centre should publicise the policy as much as possible. They further recommend that institutional policy on electronic instructional media adoption and use should be disseminated within the academy through the university bulletin, university website or e-mail. Macharia and Pelsler (2014) found that institutional policy is vital to the adoption and use of technology in teaching and learning. However, Macharia and Nyakwende (2010) found the disposition of vice-chancellors towards the adoption and use of electronic instructional media as fundamental to technology adoption and use in the system. This finding suggests that top university management (such as vice-chancellors) and stakeholders within the academia need to be enthusiastic about adoption and use of electronic instructional media in teaching and learning by developing a workable ICT policy on technology use within their institutions. Nyagowa, Ocholla and Mutula (2013)

argue that African university leaders should be more proactive in the debate on ICT policy at the national and international levels.

The present study identified lack of training as one of the critical challenges facing academics on technology adoption and use. The finding is consistent with that of previous works (Osinaike and Adekunmisi (2012) and the Association of African Universities (2000). At the University of Ibadan, Osinaike and Adekunmisi (2012) identified inadequate training as one of the great impediments to use of electronic instructional media. The Association of African Universities points that inadequate training programmes hinder the use of electronic instructional media among academics. The Association of African Universities also found lack of coherent institutional plan for introducing technology in universities, poor and unreliable maintenance of technological facilities, absence of systematised skills for integrating technology into teaching, insufficient computers for staff and students, poor and unreliable maintenance of the technology.

Training remained a critical challenge in technology adoption and use among academics (Keengwe, Kidd and Kyei-Blankson, 2009) because, as Maina and Nzuki (2015) argue, although training is a key predictor of technology use, it does not focus on how academics can use electronic instructional media in their lectures; rather, the training focuses on basic ICT literacy skills. This could be an indication that university management staff need to engage in massive training programmes for academics on the use of electronic instructional media, particularly those that promote face-to-face learning and blended learning. Al-Alwani (2005) found that training and professional development contributed significantly to the success of technology adoption and use in the university. In Makerere University, Uganda, Namukangula (2007) found that all the departments and faculties have included the training of staff in their strategic plan. Attuquayefio and Addo (2014) propose investments in technology training for academics to be able to overcome these challenges.

The study also found inadequate budgetary allocation for the acquisition and installation of electronic instructional media as another impediment to technology adoption and use. This is closely related to the issue of funding. This finding agrees with previous studies (Shonola and Joy, 2014; Tarus Gichoya and Muumbo, 2015; Lin, Huang and Chen, 2014). Shonola and Joy found inadequate funding as a challenge to adoption and use of electronic instructional

media. The study found that majority of the academics (80%) who participated in the study indicate that there is gross under-funding of the educational sector and near-total neglect by government. The issue of underfunding is affecting all aspects of education from primary to tertiary level in Nigeria and elsewhere. Tarus Gichoya and Muumbo (2015) surveyed 148 academics in three Kenyan public universities. The purpose of this study was to investigate the challenges hindering the implementation of e-learning in Kenyan public universities. The study found that funding is one of the challenges preventing the implementation of e-learning in Kenyan public universities, training of staff on e-learning, maintenance, e-content development, Internet bandwidth and e-learning infrastructural development.

Funding is a great drive in ensuring the availability (Chukwunonso and Oguike, 2013) of electronic instructional media in universities. In effect, adequate funding is necessary for the acquisition and installation of hardware and software, provision of technical infrastructure and training of academics on the use of electronic instructional media. Lin, Huang and Chen (2014) examined the barriers to the adoption of electronic instructional media among academics who were teaching Chinese as a foreign language in US universities. They concluded that adequate funding is necessary to satisfy the technological needs of academics, and this is only possible through top management support. Macharia and Pelser (2014) found that top management support had significant influence on the availability of electronic instructional media.

The present study also found that academics were faced with lack of technical support in using electronic instructional media. Findings also revealed that there was no provision for adequate support to academics from internal ICT staff, as majority of academics (54%) strongly agreed/agreed to this statement. Similar findings were reported by Umoru and Okeke (2012), Issa et al. (2011) and Yang (2008). Moses, Khambari and Wong (2008) found that technical support had great impact on the use of technology. Where technical support on technology use is lacking, academics will often times be frustrated (Cheok and Wong, 2015). Nanayakkara (2007) examined factors that influence or inhibit the adoption of e-learning systems in universities and institutes of technology and polytechnics in New Zealand and found lack of timely support as an impediment.

Finding of this current study also revealed that poor culture of using technology for teaching was one of the impediments to technology adoption and use among academics. Culture refers to the “collective programming of the mind which distinguishes the members of one group or category of people from another” (Hofstede, 1980:5). Culture is useful in predicting observable and measurable verbal and non-verbal behaviour (Hofstede, 1993). Culture has been reported to influence technology adoption and use at the institutional, national and regional levels (Van Ark, Inklaar and McGuckin, 2002). This is because the importance attached to the use of technology is not the same among individuals, races or institutions. In providing an answer to the influence of culture on technology adoption, Erumban and De Jong (2006) investigated the influence of culture on ICT adoption rates among different countries at the macro level.

In another study, Kaba and Osei-Bryson (2013) submit that culture could influence an individual’s reaction to technology adoption and use. They submit that culture could also reduce the digital divide or inequality that exists in organisations or at the national level. The authors conclude that cultural differences do contribute to the differences in technology adoption and use across countries. Afzalkhani and Lawwaf (2013) and Collis (2000) found culture as one of the obstacles to using electronic instructional media in teaching. Rhema and Miliszewska (2010) reported that cultural and linguistic backgrounds of academics are a challenge towards technology adoption and use in Libya. According to Erumban and De Jong (2006), the disposition of any nation to the adoption and use of technology has been reported to influence the culture and leadership characteristics of any institution, thereby resulting in cultural differences among institutions. Therefore, to overcome the cultural differences viz-a-viz intra-organisational digital divide, there is need for acculturation (Collis 2000) at the departmental, faculty and institutional levels.

The findings of this current study showed that academics (52.1%) strongly agreed/agreed that inadequate bandwidth constituted a challenge. This finding agrees with Tarus Gichoya and Muumbo (2015), Mtebe (2014), Mtebe and Raisamo (2014), Mtebe (2013), Oye, Iahad and Ab.Rahim (2012b). Farrell and Shafika (2007) found that all African universities, except South Africa, were seriously constrained in the use of technology by a lack of access to affordable high-speed internet connectivity. Tarus, Gichoya and Muumbo (2015) found inadequate internet bandwidth as a challenge in public universities in Kenya. Mtebe (2014) conducted semi-structured interviews and reviewed important documents from 11 institutions

in Tanzania: St. John's University of Tanzania, University of Dodoma, Zanzibar University, State University of Zanzibar, Dar es Salaam University College of Education, Tumaini University (Makumira), Nelson Mandela African Institution of Science and Technology, Open University of Tanzania, Institute of Accountancy (Arusha), University of Dar es Salaam, and Tanzania Institute of Finance Management. The study found low bandwidth, lack of policies and lack of skills as main barriers. Low bandwidth account for the low internet connection, with speeds ranging from 7 Mbps to 20 Mbps. Mtebe (2013) found slow internet speed as one of the challenges to the use of electronic instructional media, particularly in attaining blended learning in universities. The author proposed that institutions should embark on cloud computing to alleviate the problem of low bandwidth.

There are already successful use of cloud services in universities in the US, UK, Asia and Africa. Examples of such institutions in the US are North Carolina State University for face-to-face teaching, blended and distance learning (Mokhtar, Ali, Al-Sharafi and Aborujilah, 2013), University of California, and Washington State University (Sultan, 2010). In the UK, some of the universities using cloud services include Leeds Metropolitan University, University of Glamorgan, and University of Aberdeen (Mtebe, 2013). In Africa, Obi (2012) reported that over 30 institutions have partnered with Google to use Google cloud services. These institutions include University of Pretoria (South Africa), University of Ghana (Ghana), University of Mauritius (Mauritius), University of Nairobi (Wanjiku, 2009) and, incidentally, the University of Ibadan (Nigeria), one of the study areas of this current study. Mtebe and Raisamo (2014) found the use of SEACOM marine cable at Dar es Salaam University College of Education (DUCE). Therefore, DUCE was reported to have the highest bandwidth (155mbps).

It can then be said that bandwidth is one of the infrastructures necessary to drive the adoption and use of electronic instructional media. Similarly, Oye, Iahad and Ab.Rahim (2012b) confirmed that a major challenge plaguing the adoption and use of electronic instructional media in Nigerian universities is the problem of bandwidth. Rumanyika and Galan (2015) did a synthesis of thirteen literatures emanating from only Tanzania between 2010 and 2014. The study found poor ICT infrastructure (100.0%), limited access to ICT hardware and software (61.5%) and lack of competent ICT teaching staff (61.5%) as constraints to technology adoption and use. The study also found poor coordination by institutions and curriculum

variation (53.8%), insufficient government funding (53.8%) and lack of ICT training (53.8%) as critical challenges militating against the adoption and use of electronic instructional media.

Obiri-Yeboah, Kwarteng and Kyere-Djan (2013) found inadequate IT facilities in lecture theatres, inadequate ICT infrastructure (mean=3.66) and exorbitant cost of ICT facilities as the most important factors militating against adoption and use of electronic instructional media in teaching and learning. Therefore, from the findings of this current study and evidences from literature, most African universities, except South African ones, are seriously constrained in the use of technology (Farrell, Glen and Shafika, 2007). Overall, a great number of the challenges of electronic instructional media adoption are related to facilitating conditions (Alkhawaldeh and Menchaca, 2014).

Technology anxiety has been described as technophobia, a phenomenon that is mostly common among the older generation (Mathipa and Mukhari, 2014). Literature is replete with the negative effects of anxiety due to the adoption and use of technology in teaching. Parayitam, Desai, Desai and Eason (2010) noted that anxiety has a strong impact on the future use of electronic instructional media. ICT anxiety could make academics feel insecure or incompetent in the use of technology (Nunan and Wong, 2005). According to Mac Callum, Jeffrey and Kinshuk (2014), ICT anxiety could make the adoption of new technology, such as the LMS, seem harder and could result in academics shying away from using them. Mac Callum, Jeffrey and Kinshuk's study targeted tertiary students and academics. Using a multi-stage stratified convenience sampling method, academics and students were selected to partake in the study. A total of 196 responses were received from academics. The findings confirmed that ICT anxiety influenced adoption in general and mobile learning specifically, and that ICT anxiety was a hindrance to the adoption and use of electronic instructional media.

Contrary to expectations, in the quantitative part of the current study, unreliable power supply did not emerge as one of the major challenges facing academics. Nevertheless, it was ascertained from the semi-structured interview that power supply was still a challenge. The reason could be that the frustration which academics experience due to incessant power supply has been given utmost attention in the universities where this study was carried out. Other scholars such as Tedla (2012), Yonazi, (2012), Harvey (2012) and Nihuka and Voogt (2012) also identified power as a major challenge. In Nigeria, Issa et al. (2011), Oye, Salleh and Iahad (2011) and Olatokun and Opesade (2008) found power supply and the exorbitant

cost of alternative sources of power supply (power generator) as major challenges. This is an indication that Nigeria, like other African countries, is still experiencing unsteady power supply. From the foregoing discussion, it is evident that some of these challenges are similar, Attuquayefio and Addo (2014) argue that management of universities should take cognizance of these obstacles before investing in electronic instructional media, and that knowing the extent to which these challenges inhibit individual academics and/or institutions will assist stakeholders in knowing how to tackle them.

Another challenge identified by academics who participated in this study was lack of support from faculty librarians as one of the challenges. Academics need support from librarians to be able to use electronic instructional media in teaching. Studies (Leonard, 2015; Leeder and Lonn, 2013; Association of College and Research Libraries, 2010; Biddiscombe, 2002) have identified how librarians can support academics to foster the adoption and use of electronic instructional media. As identified in this current study, faculty librarians can play a facilitating role in the use of electronic instructional media by academics. Biddiscombe (2002) argued that academics need librarians' support in uploading course materials on the web, providing links to related e-databases and web resources, orientation and initial training for students and developing information literacy skills. Many universities all over the world are realising the importance of e-learning and developing e-learning initiatives through the use of the LMS. Libraries need to make a concerted effort that will promote the adoption and use of technology in teaching among academics.

The Association of College and Research Libraries (ACRL, 2010) submit that it is imperative for libraries to exert virtual presence via the LMS and social networks. Leeder and Lonn (2013) report initiatives provided by different universities in developed nations: at Dominican University, librarians contribute to the class LMS site; at Harvard University, librarians developed a resource guide for specific programmes and classes to be integrated into the LMS; at Ohio State University, librarians created a customisable library resource page within the LMS; at the University of North Carolina, Greensboro, librarians developed an LMS library portal that embeds course-specific library resource; at Buffalo State College, librarians developed a customised library module for LMS; at Duke University, an LMS template was designed to populate course pages with specific library resources. From Africa, Leonard (2015) reported that at the University of Namibia the library provides e-books, e-journals, e-

reference services, information literacy instructions and social networks to interact and communicate with users.

Largely, all these factors play a critical role in the adoption and use of electronic instructional media among academics in the context of a developing country. Tedre, Bangu and Nyagava (2009) argue that challenges that are peculiar to each setting should first be addressed while other challenges emanating from other developing countries should be handled as critical success factors. Overall, the findings of the current study on the challenges faced by academics in the adoption and use of electronic instructional media are in agreement with the two theories (UTAUT and DOI) underpinning this study.

6.8 Summary

The chapter discussed the findings of the results that were presented in Chapter 5. The discussion was guided by the research questions and supported by related studies in the existing literature and the theoretical framework that underpinned the study. The discussion demonstrated that the extent of adoption and use of electronic instructional media among academics was high and academics had made changes to accommodate the use of electronic instructional media in teaching. The constructs of the UTAUT and DOI were found strong enough to determine the factors influencing the adoption and use of electronic instructional media. The discussion revealed facilitating conditions and effort expectancy as the best predictors of technology use in an academic setting within the context of a developing nation. The discussion on the influence of media literacy skills and adoption and use of electronic instructional media revealed a positive relationship.

Media literacy is important in the adoption and use of electronic instructional media. Other variables such as gender and teaching experience have been proven to moderate the relationship between the variables of the UTAUT and DOI. The finding brought to the fore the relationship between the UTAUT construct which, from the findings, can be described as not static but dynamic. Moderating or demographic variables such as gender, age and teaching experience can be introduced to the DOI theory to make it more predictive in information system studies. The major challenges identified included lack of institutional policy on electronic instructional media adoption and use, lack of training on the use of electronic instructional media, inadequate budgetary allocation for the acquisition and

installation of electronic instructional media, lack of technical support and a poor culture of using technology for teaching. The findings of the current research reflect the factors that could facilitate or inhibit adoption and use of electronic instructional media among developing nations. It was also revealed in the discussion of findings that institutional ICT policy and motivation of academics are crucial to adoption and use of electronic instructional media.

CHAPTER SEVEN

SUMMARY, CONCLUSION AND RECOMMENDATIONS

7.1 Introduction

Sampson (2012) posits that the aim of the conclusion chapter in a PhD thesis is to present key elements of the knowledge resulting from the research, priorities for future work from the study and contribution to existing literature. Consequently this chapter provides an overall summary of the findings, conclusion and recommendations of the study. The chapter also discusses the contributions of the study to policy, practice, theory and provides suggestions for future research.

The purpose of this study was to investigate the extent of adoption and use of electronic instructional media and factors influencing adoption and use of electronic instructional media among academics in selected Nigerian universities. The following research questions were addressed: What is the extent of adoption and use of electronic instructional media in selected Nigerian universities? What factors influence adoption and use of electronic instructional media? How do media literacy skills influence adoption and use of electronic instructional media? What is the moderating effect of gender, age and teaching experience on adoption and use of electronic instructional media? What challenges are faced in the adoption and use of electronic instructional media by academics in selected Nigerian universities?

This chapter is organised around the themes of the research questions, key variables of the theory underpinning the study and broader issues around the research problem. The study was guided by the Unified Theory of Acceptance and Use of Technology Theory (UTAUT) developed by Venkatesh, et al. (2003) and Roger's Diffusion of Innovation Theory (DOI).

7.2 Summary of Chapters in the Thesis

Chapter one provided the background to the research problem, the statement of the research problem, the purpose of the study and the research questions. The chapter also provided insight into the delimitation of the study, significance of the study, theoretical framework, preliminary literature, and a brief description of the methodology. Finally, the definitions of key terms were provided, followed by an outline of the structure of the thesis.

Chapter two on theoretical framework discussed a number of theories that are commonly used to study technology adoption and use. Some of these theories include UTAUT by

Venkatesh et al. (2003); TRA by Fishbein and Ajzen (1975, 1980); TAM by Davis (1986); MPCU by Thompson, Higgins and Howell (1991); MM by Davis, Bagozzi, and Warshaw (1992) etc. Out of these theories, the UTAUT was the dominant theory chosen to underpin the study while Roger's Diffusion of Innovation theory was used in complementary position. UTAUT was preferred because it is the most recent of the technology adoption theories and has been found robust with the ability to explain 70% of the variance in technology use.

Chapter three on literature review, presented a synthesis of both empirical and theoretical literature based on the themes arising from the research questions, key variables derived from UTAUT and DOI such as performance expectancy, effort expectancy, and social influence, facilitating conditions, behavioural intention, trialability and observability. Most reviewed literatures were obtained from primary and secondary sources that were identified by searching various databases such as ProQuest, Elsevier, Web of Science and Google scholar.

Chapter four on the research methodology discussed research paradigms, research approaches, research design, population of the study, sampling procedures; data collection procedures; data analysis; reliability and validity and ethical aspects of the research. Among the three major paradigms (positivist, interpretive and critical theory) used commonly in the information systems discipline, post-positivism was found appropriate as the philosophical foundation for the study. The study engaged the mixed method research approach by combining the quantitative and qualitative research techniques. The study adopted the survey research design because it is useful in exploring attitudes, intentions, motivations and behaviours. A sample size of 267 respondents was drawn from a population comprising 732 academics from University of Ibadan and Covenant University and 11 top university management staff who were deans of the selected faculties (Science, Engineering and Arts), university librarians and directors of the centre for information and communication technology. The study used structured questionnaire and interview (semi structured) schedule to obtain data from participants. Quantitative data were analysed using SPSS while qualitative data were analysed using the NVivo 10 software. The University of KwaZulu-Natal (UKZN) Ethics Policy was complied with in full. Approvals were also obtained from the respective universities to access the respondents.

Chapter five on data analysis and presentation of findings provided the analysis of quantitative and qualitative data that were collected. The data were further described to

provide meaningful facts and information. The findings showed that various forms of electronic instructional media had been adopted and used by academics for the purpose of teaching. Findings also revealed that the extent of adoption and use of electronic instructional media was high among academics. The findings also revealed that academics have a high behavioural intention towards adoption and use electronic instructional media in teaching.

Chapter six discussed the findings. The findings were discussed based on the extant literature and theories that underpinned the study. The findings demonstrated that the extent of adoption and use of electronic instructional media among academics was high and academics had made concerted effort in accommodating the use of electronic instructional media in teaching. The constructs of the UTAUT and DOI were found strong enough in determining the factors influencing adoption and use of electronic instructional media. The findings indicated that other variables beside those of UTAUT/DOI such as media literacy skills influenced technology adoption. These variables had potential in extending and making the UTAUT more robust.

Chapter seven presents summary of the findings, conclusion and recommendations. The chapter also discusses the contributions of the study to policy, practice, theory and suggestions for future research.

7.3 Summary of Findings

The empirical findings of the study are synthesised and summarised below on the extent of adoption and use of electronic instructional media by academics in the universities studied. The section first summarises the demographic findings. This is followed by the factors influencing adoption and use of electronic instructional media. Moreover, moderating effect of gender, age and teaching experience on adoption and use of electronic instructional media as well as challenges faced by academics in the adoption and use of electronic instructional media are summarised.

7.3.1 Demographic Profile of Respondents

The findings revealed that respondents were mostly (47.9%) from Faculty of Science/Natural and Applied Science. A study by Mbatha, Ocholla, and Le Roux (2011) established that the general belief is that males dominate use and access to technology compared to their female

counterparts. As such, it was necessary to ascertain the proportion of females to males in this study.

The findings of the study indicated that there were more males 157 (73.0%) in the sample population than females. Additionally, most of the respondents 112 (52.1%) were within the age range of 36 to 46 years. This is an indication that the respondents comprised more young academics who are less likely to be techno-stressed (Elder, Gardner and Ruth, 1987). The dominance of the young respondents in the study further suggests that the respondents are able to cope with the demands of organisational technology usage (Tarafdar, Tu and Ragu-Nathan, 2010), compared to the older academics.

The respondents ranged from assistant lecturers to those in the professorial cadre. However, majority of the academics (59 or 27.4%) were in lecturer grade II. The study also showed that majority of academics (128 or 59.5%) had PhD degrees as the highest qualification while (82 or 38.2%) had master's degrees as their highest qualification. The dominance of those with PhD degrees was attributed to the fact that doctoral degree is required for teaching in universities not only in Nigeria but the world over. Most of the academics (70 or 32.6%) surveyed had served for between 6 to 10 years, which suggests the academics surveyed had acquired adequate teaching experience at the university.

7.3.2 Extent of Adoption and Use of Electronic Instructional Media among Academics

The first research question of this study sought to ascertain the extent of adoption and use of electronic instructional media in Nigerian universities. The findings covered: types of electronic instructional media adopted by academics; extent of adoption and use of electronic instructional media; use of electronic instructional media by academics; behavioural intention of academics to adopt and use electronic instructional media and trialability of electronic instructional media among academics.

The study found that various electronic instructional media had been adopted by academics in teaching. The most widely adopted electronic instructional media (hardware) were: personal computer, printer, multimedia projector and mobile phones. The findings also revealed that a significant proportion of academics had widely adopted the following software/applications: Microsoft Word (91.5%), PowerPoint (84.6%), Spreadsheets (Excel: 66.0%). The findings

also revealed that the adoption of Internet, e-mail, e-journals, e-books and web resources among academics was widespread. However, findings showed that Learning Management System (LMS), plagiarism software and social networking sites (You Tube, Wikis, Twitter and Blog) with the exception of Facebook had not been adopted by academics in Nigerian universities for teaching purposes. Details of this result can be found in chapter five of this thesis (see section 5.4). These findings suggest that the most prevalent electronic instructional media adopted by academics for the purpose of teaching were personal computer (89.3%), printer (75.3%), multimedia projector (72.4%), Microsoft Word (91.5%), PowerPoint (84.6%), Spreadsheets (Excel: 66.0%), Internet, e-mail, e-journals, e-books and web resources.

With regard to the extent of adoption and use of electronic instructional media among academics, findings revealed that all the attributes measured are significant with the exception of one which had a mean value below 3. It could then be said that the attributes having a mean score above 3 demonstrate the extent of adoption and use of electronic instructional media among academics. The top rated item in Table 5.3 was “I have made changes to accommodate electronic instructional media in my lectures”, where majority of academics ($\bar{x} = 4.31$) strongly agreed/agreed with the statement. The second highly rated item was “I regularly pursue innovative ways to incorporate electronic instructional media into my lectures as well as give my students course materials in electronic format” where majority of academics ($\bar{x} = 4.26$) strongly agreed/agreed with the statement. The third highly rated item was “I give my students course material in electronic format” where majority of academics ($\bar{x} = 4.17$) strongly agreed/agreed with the statement. Interviews with top university management staff such as the deans of faculties, the university librarians and director, centre for information and communication technology confirmed that the extent of adoption of electronic instructional media among academics was high. Meanwhile, the extent of adoption and use of electronic instructional media differed from department to department and from faculty to faculty as revealed in the qualitative study.

On the question of usage level of electronic instructional media by academics in teaching as measured by two parameters: frequency of use and purpose of use. Findings showed that the following electronic instructional media: personal computer; Microsoft Office Word; Internet; e-mail; mobile phones; printer ; e- journals; e-books; PowerPoint and web resources

are used on a daily basis. Further analysis revealed that the following electronic instructional media were rarely used by academics: scanner; digital camera; Twitter; Blog and Wikis. Since the expected mean is 3.00, the result implies that the LMS and plagiarism software having a mean score of 2.98 and 2.32 respectively were never used by academics:

As for the purposes for which electronic instructional media were used, the findings as shown in Appendix 10 revealed that academics used electronic media (such as personal computer, scanner, printer, Microsoft word, Internet, web resources, e-journals, e-books) to prepare lecture notes. The survey findings further revealed that academics used multimedia projector and PowerPoint for presentation of lectures. The findings also showed that academics used printers for producing assignments/course manual. They also used Internet and e-mail for communication purposes with students and colleagues. However, findings revealed very low use of e-mail by academics for students to turn in assignments, research essays, thesis and term papers.

On the issue of behavioural intention of academics towards adoption and use of electronic instructional media, the findings returned the highest mean score of 4.27. With a mean score of 4.27, respondents accentuate willingness to recommend the use of electronic instructional media to other academics for teaching purposes. The result suggests that academics had a positive disposition towards adoption and use of electronic instructional media in teaching. The corresponding hypothesis tested whether there was a significant relationship between behavioural intention and adoption and use of electronic instructional media. The findings revealed that behavioural intention and adoption and use of electronic instructional media with ($F_{(1, 213)} = 19.999, p < .05$) were positively related ($R=0.293$) and behavioural intention was capable of explaining 8.6% of the variance in adoption and use of electronic instructional media in teaching among academics ($R^2 = 0.086$). Therefore, the result implies that the relationship between behavioural intention and adoption and use of electronic instructional media among academics for teaching purposes proved both positive and significant as reflected in the study.

The last aspect on the extent of adoption and use of instructional media by academics examined academics' trialability of electronic instructional media. The study obtained the highest mean score of 4.15 on the attributes set to measure trialability of electronic

instructional media among academics. This result affirmed that trialability of electronic instructional media among academics is essential. Trialability has been found to be positively correlated with behavioural intention (Lee, 2007). This finding implies that trialability can accelerate adoption (Perkins, 2011) of electronic instructional media among academics.

7.3.3 Factors Influencing Adoption and Use of Electronic Instructional Media

The second research question sought to determine the factors influencing adoption and use of electronic instructional media among academics. This research question was addressed by both the quantitative and qualitative approaches. The Beta values for effort expectancy ($\beta = 0.404, p = 0.004 < 0.05$) and facilitating condition ($\beta = 0.581, p = 0.000 < 0.05$) show that these attributes positively influenced adoption and use of electronic instructional media. Findings also showed that among all the independent variables, facilitating conditions and effort expectancy were the strongest predictors of adoption and use of electronic instructional media among academics for teaching purposes (see findings in section 5.5). The findings further revealed that facilitating conditions and effort expectancy jointly accounted for 16.0% variability in adoption and use of electronic instructional media by academics. Furthermore, findings showed that there was a joint significant relationship between the strongest predictors ($F_{1, 212} = 20.212, p < 0.05$). Since the value of p is less than 0.05 for the two variables, the model was found significant. This finding suggests that the combination of facilitating condition and effort expectancy significantly predict the dependent variable (adoption and use of electronic instructional media). This finding further suggests that facilitating condition and effort expectancy are the most significant factors for adoption and use of electronic instructional media in teaching among academics. Interviews with the deans, university librarians and directors of centre for information technology confirmed that infrastructural support (facilitating conditions) is the most important factor influencing adoption and use of electronic instructional media. The study identified facilitating conditions as 24 hours of light; regular training; campus wide internet connectivity; adequate bandwidth; technical support; availability and accessibility to electronic instructional media, and dynamic roles by the library. Interview findings also revealed that an ICT policy is one of the facilitating conditions for adoption and use of instructional media by academics. In one of the universities surveyed it was a requirement that all lecture materials should be uploaded on PowerPoint platform, and delivered electronically (using projectors or interactive whiteboard).

Two hypotheses were tested in relation to the second research question which sought the factors influencing adoption and use of electronic instructional media. The first corresponding hypothesis to research question two stated that there was no significant relationship between the DOI constructs (compatibility, trialability, observability) and adoption and use of electronic instructional media among academics. The study found a joint significant relationship between the DOI constructs (i.e independent variables: compatibility, trialability, and observability) and dependent variables (adoption and use of electronic instructional media) as revealed by ($F_{3, 211} = 4.852, p < .05$). The result implies that the independent variables (compatibility, trialability, observability) were positively related ($R = 0.254$), though the relationship was weak. Further findings revealed that compatibility, trialability, observability jointly accounted for 6.5% of the total variance in adoption and use of electronic instructional media by academics ($R^2 = 0.065$). But trialability ($\beta = 0.272$ $t = 3.292$ $p < .05$) was the only variable contributing significantly to adoption and use electronic instructional media among academics. The R^2 value was (0.040), suggesting that trialability variable explained 4% of variance in predicting adoption and use of electronic instructional media.

The second corresponding hypothesis to the second research question which sought the factors influencing adoption and use of electronic instructional media stated that there was no significant relationship between the UTAUT constructs (performance expectancy, effort expectancy, and social influence, facilitating conditions) and behavioural intention. The corresponding finding revealed that ($F_{4, 210} = 63.134, p < 0.05$) between the independent variables (performance expectancy, effort expectancy, social influence and facilitating conditions) and dependent variables (behavioural intention). The findings revealed that the independent variables (performance expectancy, effort expectancy, social influence and facilitating conditions) jointly accounted for 54.6% of the total variance in behavioural intention towards adoption and use of electronic instructional media by academics for teaching purposes ($R^2 = 0.546$). This result implies that performance expectancy, effort expectancy, social influence and facilitating conditions are capable of explaining 54.6% of the variance in behavioural intention of academics to adopt and use electronic instructional media for teaching purposes. However, facilitating conditions was found not to have any significant contribution towards behavioural intention when PE, EE and SI were present. The

findings of the study imply that behavioural intention is influenced by performance expectancy, effort expectancy and social influence.

Overall, the best predictors of adoption and use of electronic instructional media among academics were facilitating conditions and effort expectancy. Other important factors influencing adoption and use of electronic instructional media as found in this study were: trialability, behavioural intention and culture. However, performance expectancy, effort expectancy and social influence were significant antecedents of academics' behavioural intention towards electronic instructional media adoption and use in teaching.

7.3.4 Influence of Media Literacy Skills on Adoption and Use of Electronic Instructional Media

The third research question sought information on the relationship between media literacy skills of academics and adoption and use of electronic instructional media. The findings in Table 5.9 show a regression analysis of the relationship between media literacy skills and adoption and use of electronic instructional media. The findings suggest a significant relationship between media literacy skills and adoption and use of electronic instructional media $F(1, 213) = 19.423, p < 0.05$. The findings also revealed a positive relationship ($R = 0.289$) between media literacy skills and adoption and use of electronic instructional media (though the relationship was weak). The variable media literacy skills accounted for 7.9% of the total variance in the adoption and use of electronic instructional media ($R^2 = 0.079$). A positive relationship can be interpreted to mean that as media literacy skills of academics increases, adoption and use of electronic instructional media also increases.

7.3.5 Moderating Effect of Gender, Age and Experience on Adoption and Use of Electronic Instructional Media

The study sought to determine the moderating effect of gender, age, and teaching experience on the relationship between independent variables (performance expectancy, effort expectancy, social influence, facilitating conditions, compatibility, trialability, and observability) and the dependent variable (adoption and use of electronic instructional media). Findings showed that the overall interaction effect of gender $\{R^2 = .025, F = 1,205 = 6.453, p = .012, b = 5.104 \text{ E-}011, t(206) = 2.540\}$ and teaching experience $\{R^2 = .019, F(1,205) = 7.577, p = .006, b = 2.584 \text{ E-}011, t(206) = 2.753\}$ was statistically significant on the relationship between the independent variables and adoption and use of electronic

instructional media. However, the overall interaction effect of age $\{(R^2 = 0.015, F_{(1,205)} = 3.862, p = .051, b = 2.731 \text{ E-}011, t(206) = 1.965\}$ was statistically not significant on the relationship between the independent variables and adoption and use of electronic instructional media.

This result suggests that gender and teaching experience have significant moderating effect on the factors determining adoption and use of electronic instructional media for teaching purposes. But no significant moderating effects of age were found on the relationship between the independent variables and adoption and use of electronic instructional media. Surprisingly, further findings revealed that no significant moderating effects of gender, age and teaching experience were found on each of the independent variables (performance expectancy, effort expectancy and social influence, compatibility, trialability, and observability) except facilitating conditions. This finding suggests that relationship between facilitating conditions and adoption and use of electronic instructional media was moderated by gender ($\beta = 0.396, t(206) = 3.221, p = 0.001$), age ($\beta = 0.398, t(206) = 3.238, p = 0.001$) and teaching experience ($\beta = 0.393, t(206) = 3.194, p = .002$).

These findings imply that facilitating condition is a significant concern for both male and female academics, young and old regardless of their teaching experience. Overall, the result suggests that gender and teaching experience have significant moderating effects on the factors determining adoption and use of electronic instructional media for teaching purposes. The corresponding hypothesis stated that there was no significant relationship between demographic variables (gender, age and teaching experience) of academics and adoption and use of electronic instructional media. Findings revealed that none of the demographic variables gender ($\beta = -0.015$), age ($\beta = -0.038$) and teaching experience ($\beta = -0.01$) at ($p > 0.05$) had significant relationship with adoption and use of electronic instructional media. This finding implies that gender, age and teaching experience had no direct influence on electronic instructional media adoption and use.

7.3.6 Challenges of Adoption and Use of Electronic Instructional Media

The fifth research question sought to determine the challenges of adoption and use of electronic instructional media among academics in Nigerian universities. The findings revealed the following challenges:

1. Lack of institutional policy on electronic instructional media adoption and use
2. Lack of training on the use of electronic instructional media
3. Inadequate budgetary allocation for acquisition and installation of electronic instructional media
4. Lack of technical support
5. Poor culture of using technology for teaching and learning
6. Limited access to electronic instructional media
7. Inadequate support for internal IT staff
8. ICT anxiety
9. Time
10. Low bandwidth
11. Lack of support from faculty/subject librarians.

7.4 Conclusion

This section presents conclusion of the study. The conclusion covers the following areas: characteristics of the respondents; extent of adoption and use of electronic instructional media among academics; factors influencing adoption and use of electronic instructional media; influence of media literacy skills on adoption and use of electronic instructional media and challenges of adoption and use of electronic instructional media.

7.4.1 Characteristics of the Respondents

The study established that about half of the respondents were from faculty of Science/Natural and Applied Science with males dominating the sample population. Most of respondents were within the age bracket of 36 to 46 years old. The respondents ranged from Assistant lecturer to those in the professorial cadre, but majority of the academics were in Lecturer grade II. About sixty percent of the respondents had PhD degrees with a few (38.2%) having master's degree. Most academics had served for between 6 to 10 years. Bamiro (2012) found that academics in Nigeria are few in the professorial and senior lecturer cadres because without a PhD, no staff can be promoted to these levels. The study concludes that the majority of academics who participated in this study are in the early stage of their career. Moreover, the study further concludes that most of the academics in Nigerian universities are within the lecturer category suggesting they are likely to be more involved in teaching than in research and consultancy services.

7.4.2 Extent of Adoption and Use of Electronic Instructional Media among Academics

The overall finding of the study showed that the extent of adoption of electronic instructional media in teaching among Nigerian academics was high. However, the high adoption of electronic instructional media did not translate into high usage. Academics were found to use these electronic instructional media mainly for preparing lecture notes, presentation of lectures, producing assignments/course manual and communication purposes with students and colleagues. Moreover, adoption and use of electronic instructional media such as LMS, plagiarism software, interactive whiteboard and social networking sites for teaching purposes were yet to gain much ground among Nigerian academics. These findings seem to suggest that academics in Nigerian universities have not effectively espoused instructional media in teaching. The study concludes that Nigerian academics are yet to fully embrace the use of electronic instructional media for knowledge delivery.

7.4.3 Factors Influencing Adoption and Use of Electronic Instructional Media

The study established that, facilitating conditions and effort expectancy were the strongest factors influencing adoption and use of electronic instructional media among academics for teaching purposes. The study further established from the qualitative study that the necessary facilitating conditions for adoption and use of electronic instructional media were: availability and access to electronic instructional media; adequate bandwidth, campus-wide internet connectivity, steady power/electricity supply, technical support, regular training, institutional policy, culture and support from the librarians. The findings seem to point to infrastructural issues such as bandwidth, internet connectivity, electricity supply and technical support as the most common factors influencing adoption of electronic instructional media among academics in universities in Nigeria. The study concludes that non supportive environment as seen in the limited bandwidth, unsteady power supply, lack of technical support, and irregular training among others is militating against adoption and use of electronic instructional media among academics in Nigerian universities.

7.4.4 Influence of Media Literacy Skills on Adoption and Use of Electronic Instructional Media

The overall findings of the study revealed that there is a significant relationship between media literacy skills and adoption and use of electronic instructional media. The findings also

revealed a positive relationship between media literacy skills and adoption and use of electronic instructional media. The variable media literacy skills accounted for 7.9% of the total variance in the adoption and use of electronic instructional media. It is therefore concluded that media literacy skills is a major prerequisite for adoption and use of electronic instructional media in teaching. As media literacy skills of academics increases, the competency to use electronic instructional media in teaching will also increase.

7.4.5 Moderating Effect of Gender, Age and Teaching Experience on Adoption and Use of Electronic Instructional Media

The study findings revealed that gender and teaching experience, when considered as moderators, influenced the adoption and use of electronic instructional media. It was however surprising to find that age did not have any significant moderating effect on adoption and use of electronic instructional media. On the individual contribution of the constructs of UTAUT and the DOI used in this study, the relationship between facilitating conditions and adoption and use of electronic instructional media was moderated by gender, age and teaching experience. This implies that facilitating condition is a significant concern for both male and female academics, young and old, irrespective of the teaching experience.

7.4.6 Challenges of Adoption and Use of Electronic Instructional Media

The fifth research question sought the challenges of adoption and use of electronic instructional media. The challenges include: lack of institutional policy on electronic instructional media adoption and use; lack of training; inadequate budgetary allocation for acquisition and installation of electronic instructional media; lack of technical support; poor culture of using technology among others. A significant finding reported in this study is lack of support from faculty/subject librarians as one of the major issues inhibiting adoption and use of electronic instructional media among academics. The findings indicate that most of the challenges were internal to most universities, and thus could be addressed through proactive management interventions. The study thus concludes that the top management staff in Nigerian universities should enlist the support of the private sector to address some of these challenges.

7.4.7 Overall Conclusion

Overall, the findings seem to suggest that the extent of adoption and use of electronic instructional media was generally high as reflected in the wide range of electronic

instructional media that were used in lecture preparation, presentation and communication purposes. However, the high level of adoption does not necessarily translate into extensive use of electronic instructional media in teaching. The study concludes that Nigerian academics are not using electronic instructional media for knowledge delivery as much as they should. The study established that the best predictors of technology adoption and use in educational settings are facilitating conditions and effort expectancy. Moreover, as media literacy skills of academics increases, adoption and use of electronic instructional media will also increase. The findings also suggest that academics are faced with several challenges in their quest to adopt and use electronic instructional media in teaching. These challenges, which must be addressed, relate to infrastructure improvement, capacity building, and technical support among others.

7.5 Recommendations

From the findings of the empirical study, theory and literature reviewed, the researcher makes recommendations on the following aspects: adoption and use of electronic instructional media; factors influencing technology adoption and use in teaching; media literacy skills of academics; moderating effect of demographic variables on electronic instructional media adoption and use; and challenges of adoption and use of electronic instructional media.

7.5.1 Adoption and Use of Electronic Instructional Media

The first research question of this study examined the types of electronic instructional media that were adopted by academics for teaching purposes. The major finding was that the most common electronic instructional media adopted by academics were personal computer, printer, multimedia projector, Microsoft Word, PowerPoint Microsoft Excel, Internet, e-mail, e-journals, e-books and web resources. The findings suggest that the level of adoption of electronic instructional media by academics in teaching and learning was high though not all the electronic instructional media were being used by academics for teaching purposes.

Recommendation 1: A framework for the integration of electronic instructional media, such as LMS, interactive board, electronic databases, and social networking sites into the curriculum should be put in place.

Recommendation 2: Universities should create awareness among academics on the importance of integrating interactive white board, LMS and plagiarism software in their teaching milieu. Partnership should also be sought with various agencies such as the National Universities Commission (NUC), Association of African Universities (AAU) and UNESCO so that academics can gain necessary exposure on the use of instructional technologies.

7.5.2 Factors Influencing Adoption and Use of Electronic Instructional Media

The second research question determined the factors influencing adoption and use of electronic instructional media among academics. The findings showed that effort expectancy and facilitating conditions positively influenced adoption and use of electronic instructional media. Further findings revealed that facilitating conditions and effort expectancy were the strongest factors influencing adoption and use of electronic instructional media among academics for teaching purposes.

Recommendation 3: It is recommended that institutional policy on adoption and use of electronic instructional media should be developed by the respective universities in order to create a conducive environment for academics to use electronic instructional media in teaching and learning. Such policies should be aimed at improving requisite infrastructure such as internet connectivity and adequate electricity supply to enhance adoption and use of electronic instructional media.

Recommendation 4: Universities should put in place capacity building programmes to equip academics with skills that will enhance use electronic instructional media in their teaching. The capacity building should be extended to cover the area of technical support skills to ensure continued use of electronic instructional media without interruptions. Individual factors such as gender, age and teaching experience of academics should be considered when developing such capacity building programmes on technology adoption and use.

7.5.3 Media Literacy Skills of Academics

The study sought to establish the influence of media literacy skills on adoption and use of electronic instructional media among academics. The overall findings of the study revealed a significant and a positive relationship between media literacy skills and adoption and use of electronic instructional media (See Section 5.6 in Chapter 5).

Recommendation 5: Universities in Nigeria should consider conducting needs assessment to ascertain the necessary training needed by academics. Such needs assessment would provide the baseline data that will inform decision makers within the university about the gaps between the current competency of academics in using electronic instructional media, and what they need to know to enhance use.

Recommendation 6: Universities should provide professional development programmes that are targeted towards improving media literacy skills of academics. Such programmes should be innovative and directed towards enhancing competency of academics on the use of instructional technology.

7.5.4 Moderating Effect of Demographic Variables on Electronic Instructional Media Adoption and Use

Findings revealed that gender and teaching experience moderated the relationship between the independent variables (performance expectancy, effort expectancy, social influence, facilitating conditions, compatibility, observability and trialability) and adoption and use of electronic instructional media. However, age was found not to moderate the relationship between the independent variables and the dependent variable. Therefore, affirmative actions should be incorporated in strategies developed for enhancing electronic instructional media uptake for female academics.

7.5.5 Challenges of Adoption and Use of Electronic Instructional Media

As shown by findings presented in section 5.8, lack of institutional policy on electronic instructional media adoption and use; lack of training; inadequate budgetary allocation for acquisition and installation of electronic instructional media; lack of technical support; poor culture of using technology among others; lack of support from faculty/subject librarians were the challenges facing academics in Nigerian universities.

Recommendation 7: Universities should consider developing internal ICT policies on integrating electronic instructional media into teaching and learning. The policies should provide clarity on standards, strategies, best practices, infrastructural acquisition, internet access, gender equity and data/information security.

Recommendation 8: Faculty/subject librarians should provide support to academics in uploading course materials on the Web, and create awareness on the use of electronic instructional media in teaching through workshops and seminars.

7.6 Contributions and Originality of the Study

The originality of this study is reflected in a number of ways. Previous studies have investigated the determinants of technology adoption and use decisions based on Technology Acceptance Model (TAM). These studies, in terms of scope, examined the relationship between the combination of academics' individual characteristics and attitudes towards technology adoption and use (Wario, 2014). Other studies (Rellinger, 2014; Ntemana and Olatokun, 2012; Hsbollah and Idris, 2009; Almobarraz, 2007; Martins, Steil and Todesco, 2004; Kendall et al., 2001) used DOI. In addition scholars such as (Joji, Abdul- Mumin and Ismail, 2012; Mourad, 2012; Teo, 2011; Oye, Iahad and Rabin, 2011) have examined technology adoption and use among academics using UTAUT as the theoretical lens. The present study used a combination of theories (UTAUT and DOI) to understand factors influencing technology adoption and use. The originality of this study, furthermore, lies in its ability to establish the best predictors of technology adoption and use in university context of a developing country such as Nigeria.

This present study empirically examined adoption and use of electronic instructional media among academics using mixed methods approach. Previous studies conducted in Nigeria have predominantly used quantitative method (Oye, Iahad and Ab. Rahim, 2014; Joji and Abdul- Agbatogun, 2013; Mumin and Ismail, 2012) and not a combination of methods. The mixed method approach enabled the researcher to conduct an in-depth investigation into the issues of adoption and use of electronic instructional media.

The study also provides empirical baseline data as managerial guidelines for policy formulation on driving and promoting electronic instructional media adoption and use in Nigerian universities and other higher institutions in other developing nations.

7.6.1 Contribution to Theory

Theoretically, the present study provides additional insight into the understanding of users' behavioural intentions towards technology adoption and use in university environments in Nigeria as a developing country. This study also contributes to existing literature on technology adoption and use especially as it concerns the moderating effect of gender and teaching experience on performance expectancy, effort expectancy, social influence and facilitating conditions and technology adoption and use. Gender, age and teaching experience were found to mediate mainly with facilitating conditions. The study established that facilitating condition was a predictor of technology adoption and use, whether moderated or not moderated by age. The study is also relevant as it validated UTAUT and DOI in the context of a developing country.

In addition, this study established the relationships between teaching experience as a moderating variable on the independent constructs (performance expectancy, effort expectancy, social influence, facilitating conditions, compatibility, trialability, and observability) of the UTAUT and DOI and technology adoption and use. This is one of the major contributions of this study that could direct future research. Previous studies such as Venkatesh et al. (2003) had established the relationship between experience and technology adoption and use. The study positioned experience within the educational context by examining teaching experience in particular. The UTAUT can be extended by adding media literacy skills as an additional construct to predict technology use in any contextual setting.

7.6.2 Contribution to Policy

The policy makers in Nigeria may find the outcome of the study useful in developing a framework for information policies that address technology adoption and use in teaching. In university environment the study may assist the authorities in developing institutional policies on integration of electronic instructional media into teaching and learning.

7.6.3 Contribution to Practice

This study provides information on the factors that influence academics' adoption and use of electronic instructional media. The study found that facilitating conditions and effort expectancy were the strongest determinants of adoption and use of electronic instructional media among academics. The findings could assist the universities to develop strategies that can foster adoption and use of electronic instructional media and improve pedagogy for the electronic environment. The study makes a contribution towards a framework for understanding the facilitators and inhibitors of technology adoption and use among academics and provides recommendations on how these challenges can be addressed to improve education process in Nigeria. The findings may be used by librarians in university environment to align their roles to changes in education pedagogy brought forth by information and communication technologies.

7.6.4 Contributions to Methodology

This study contributes to methodology by using stepwise multiple regression to establish the strongest predictor(s) of the dependent variable (adoption and use of electronic instructional media). Stepwise multiple regression is the most advanced form of regression in data analysis that helps in empirical exploration of the most influential factors of technology use or adoption. This study therefore demonstrated that stepwise multiple regression is appropriate for determining independent variable(s) that are the best predictors of technology adoption and use among academics in teaching. This study also contributes to methodology by using mixed method approach to ascertain the factors influencing technology adoption and use in the universities studied.

7.7 Suggestion for Further Research

The current study examined adoption and use of electronic instructional media among academics in Nigerian universities. The study also investigated the factors influencing adoption and use of electronic instructional media among academics. The study was limited to two universities, one public and one private in South West Nigeria. The study was limited to academics, deans of faculties, directors of centre for information technology and university librarians.

Nigeria has six geographical zones. It is therefore recommended that further studies should be conducted in other geographical zones in Nigeria that present different contexts from the one studied. The current study was also limited to only two universities. Future research should be conducted in other universities, polytechnics and colleges of Education. This should include public, state and private higher institutions. This would offer a holistic view of how electronic instructional media are being used in teaching in Nigerian higher institutions, and provide the baseline data necessary for planning in Nigerian higher institutions.

The current study focused on only academics and did not cover students who are also key users of electronic instructional media in learning. Future research should seek to understand factors influencing technology adoption and use in educational settings from the students' point of view.

Future research should also extend and cover other variables such as media literacy skills, teaching experience and culture in the UTAUT. The moderating effect of these constructs should be studied in order to further enhance the robustness of the UTAUT especially from the context of educational setting in developing nations. More empirical studies should be conducted on the interactions among the moderating factors of UTAUT and technology adoption and use in educational context. Future research could also consider using a combination of other technology adoption models such as Technology Fit Model or Model of PC Utilisation, so as to develop a more parsimonious model on technology adoption and use.

References

- Abaidoo, N., & Arkorful, V. (2014). Adoption and effective integration of ICT in teaching and learning in higher institutions in Ghana. Retrieved 15 September 2015 from <http://www.ijern.com/journal/2014/December-2014/35.pdf>
- Abbas, K. D. (2014). Expert or novice in information searching, access and sharing: An information literacy model for Nigerian university system. *European Journal of Computer Science and Information Systems*, 2(2), 30-37.
- Abu-Al-Aish, A., & Love, S. (2013). Factors influencing students' acceptance of m-learning: An investigation in higher education. *The International Review of Research in Open and Distance Learning*. Retrieved 11 July 2015 from <http://www.irrodl.org/index.php>
- Abubakar, F. M., & Ahmad, H. B. (2013). The moderating effect of technology awareness on the relationship between UTAUT constructs and behavioral intention to use technology: A conceptual paper. *Australian Journal of Business and Management Research*, 3(2), 14-23.
- Abu-Shanab, E., & Ababneh, L. (2015). Exploring academicians acceptance of e-learning using an extended TAM: The case of Yarmouk University. *Journal of Network Communications and Emerging Technologies (JNCET)*, 1(1), 1-5.
- Abu-Shanab, E., & Pearson, M. (2009). Internet banking in Jordan: An Arabic instrument validation process. *International Arab Journal of Information Technology*, 6(3), 235-244.
- AbuShanab, E., Pearson, J. M., & Setterstrom, A. (2010). Internet banking and customers' acceptance in Jordan: The unified model's perspective. *Communications of the Association for Information Systems*, 26(1), 493-524.
- Achimugu, P., Oluwagbemi, O., & Oluwaranti, A. (2010). An evaluation of the impact of ICT diffusion in Nigeria's higher educational institutions. *Journal of Information Technology Impact*, 10(1), 25-34.
- Acılar, A. (2011). Exploring the aspects of digital divide in a developing country. *Issues in Informing Science and Information Technology*, 8, 231-244.
- Adams, D. A., Nelson, R. R., & Todd, P. A. (1992). Perceived usefulness, ease of use, and usage of information technology: A replication. *MIS Quarterly*, 227-247.
- Adewole-Odeshi, E. (2014). Attitude of students towards e-learning in South-West Nigerian universities: An application of technology acceptance model. Retrieved 11 September 2015 from <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=2504&context>
- Admiraal, W., Lockhorst, D., Smit, B., & Weijers, S. (2013). The integrative model of behaviour prediction to explain technology use in post-graduate teacher education programs in the Netherlands. *International Journal of Higher Education*, 2(4), 172-178.

- Adomi, E. E., & Kpangban, E. (2010). Application of ICTs in Nigerian secondary schools. *Library Philosophy and Practice*. Retrieved 12 April 2014 from <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1353&context=libphilprac>
- Afzalkhani, M., & Lawwaf, R. (2013). Recognizing the obstacles of utilizing teaching methods based on information technology regarding the perspectives of high school teachers in Semnan province. *International Research Journal of Applied and Basic Sciences*, 6(7), 942-949.
- Agaba, D., Kigogo-Bukenya, I. M. N., & Nyumba, J. B. (2004). Utilization of electronic information resources by academic staff at Makerere University. *University of Dar es Salaam Library Journal*, 6(1), 18-28.
- Agarwal, R. (2000). Individual acceptance of information technologies. *Educational Technology Research and Development*, 40, 90-102.
- Agarwal, R., & Prasad, J. (1997). The role of innovation characteristics and adoption across time: A cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS Quarterly*, 23(2), 183-213.
- Agarwal, R., & Prasad, J. (1999). Are individual differences germane to the acceptance of new information technologies? *Decision Sciences*, 30(2), 361-391.
- Agarwal, R., Sambamurthy, V., & Stair, R. M. (2000). Research report: The evolving relationship between general and specific computer self-efficacy-an empirical assessment. *Information Systems Research*, 11(4), 418-430.
- Agbatogun, A. O. (2013). Interactive digital technologies' use in southwest Nigerian universities. *Educational Technology Research and Development*, 61(2), 333-357.
- Agbo, A. D. (2015). Strategies for enhancing the acquisition of internet literacy skills among the academic staff in Nigerian universities. *International Journal of Research*, 2(1), 200-207.
- Agbonlahor, R. O. (2008). Individual characteristics as correlates of attitudes to information technology among Nigerian university lecturers. *African Journal of Library, Archives, and Information Science*, 18(2), 131-146.
- Agbonlahor, R. O. (2006). Motivation for use of information technology by university faculty: a developing country perspective. *Information Development*, 22(4), 263-277.
- Agbonlahor, R. O. (2005). Gender differentials in the adoption and use of information and communication technologies by lecturers in Nigerian Universities. *The gender politics of ICT*, 207-222.
- Agboola, A. K. (2005). A study of readiness towards the introduction of e-learning as a teaching and learning environment among lecturers: a case study of the International Islamic University Malaysia. (Unpublished Ph.D thesis, International Islamic University Malaysia). Retrieved 18 September 2015 from www.lib.iiu.edu
- Agboola S. A. (1979). *An agricultural atlas of Nigeria*. Oxford: Oxford University Press.

- Aguila-Obra, A. R., & Padilla-Mele'Ndez, A. (2006). Organisational factors affecting internet technology adoption. *Internet Research* 6(1), 94-110.
- Ajayi, I. A., & Ekundayo, H. T. (2008). The deregulation of university education in Nigeria: Implications for quality assurance. *Nebula*, 5(4), 212-224.
- Ajzen, I. (1991). The theory of planned behaviour. *Organisational Behaviour and Human Decision Processes*, 50(2), 179-211.
- Ajzen, I. (1985). *From intentions to actions: A theory of planned behaviour*. In J. Kuhl & J. Beckman (Eds.), *Action control: From cognition to behaviour* (pp. 11–39). Heidelberg, Germany: Springer.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behaviour*. Englewood Cliffs, NJ: Prentice-Hall.
- Akbar, F. (2013). *What affects students' acceptance and use of technology? A test of UTAUT in the context of a higher-education institution in Qatar* (Unpublished Senior Honors dissertation). Carnegie Mellon University.
- Akindoju, O. G., Nwagwu, R. N., Akintoye, H. O., Avoseh, J. O., & Aregbede, S. (2014). Adequacy and utilisation of information and communication technologies by computer science lecturers in tertiary institutions in Lagos state, Nigeria. *International Journal for Innovation Education and Research*, 2(2), 60-67.
- Akinola, R. O, Liverpool, L.S.O & Marut, M.J. (2012). Deploying educational technologies for learning and teaching at Nigerian HEIs. *ICMS*, 5, 125-143.
- Akuegwu, B. A.P., Ntukidem, J., & Jaja, G. (2011). Information and Communications Technology (ICT) facilities utilisation for quality instructional service delivery among university lecturers in Nigeria. *Review of Higher Education in Africa*, 13(1), 33-53.
- Al-alak, B. A., & Alnawas, I. A. (2011). Measuring the acceptance and adoption of e-learning by academic staff. *Knowledge Management & E-Learning: An International Journal (KM&EL)*, 3(2), 201-221.
- Al Senaidi, S. (2009). *An investigation of factors affecting Omani faculty members' adoption of information and computing technology* (Unpublished PhD thesis), University of North Texas.
- Alajmi, M. (2011). *Modeling student perception of web 2.0 technologies adoption in Kuwait* (Unpublished PhD thesis, University of North Texas). Retrieved 15 September 2014 from <http://digital.library.unt.edu/ark:/67531/metadc67955/m2/1/high>
- Al-Alak, B. A., & Alnawas, I. A. (2011). Measuring the acceptance and adoption of e-learning by academic staff. *Knowledge Management & E-Learning: An International Journal (KM&EL)*, 3(2), 201-221.
- Al-Alwani, A. E. (2005). *Barriers to integrating information technology in Saudi Arabia science education* (Unpublished Doctoral thesis, University of Kansas). U.S.A. Retrieved 7 August 2015 from <http://adsabs.harvard.edu/abs/2005PhDT.....64A>

- Alapetite, A., Andersen, H. B., & Hertzum, M. (2009). Acceptance of speech recognition by physicians: A survey of expectations, experiences, and social influence. *International Journal of Human-Computer Studies*, 67(1), 6-49.
- Alatawi, F. M. H., Dwivedi, Y. K., Williams, M. D., & Rana, N. P. (2012). Conceptual model for examining knowledge management system (KMS) adoption in public sector organizations in Saudi Arabia. *Paper presented at the tGOV Workshop '12 (tGOV12), Brunei Universiti, West London.*
- Al-Gahtani, S. S. (2003). Computer technology adoption in Saudi Arabia: Correlates of perceived innovation attributes. *Information Technology for Development*, 10(1), 57-69.
- Al-Awadhi, S. & Morris, A. (2008, January). *The use of the UTAUT Model in the Adoption of E-government Services in Kuwait.* Proceeding of the International Conference on System Sciences, Hawaii (pp. 219-219). IEEE.
- Al-Gahtani, S. S. (2014). Empirical investigation of e-learning acceptance and assimilation: A structural equation model. *Applied Computing and Informatics*. Retrieved 5 September 2015 from <http://www.sciencedirect.com/science/article/pii/S221083271>
- Al-Gahtani, S. S., Hubona, G. S., & Wang, J. (2007). Information technology (IT) in Saudi Arabia: Culture and the acceptance and use of IT. *Information and Management*, 44(8), 681-691.
- Alghazo, I. M. (2006). Computer competencies of the faculty members of College of Education at the United Arab Emirates University. *International Journal of Instructional Media*, 33(3), 327-335.
- Alharbi, S., & Drew, S. (2014). Using the Technology Acceptance Model in understanding academics' behavioural intention to use Learning Management Systems. *International Journal of Advanced Computer Science and Applications*, 5, 143-155.
- Aljaraideh, Y. A., & Shdooh, W. M. (2014). Factors Effecting the Usage of ICT by the Teaching Members at Jerash University. *Canadian Social Science*, 10 (6), 222-226.
- Aliyu, A. A., Bello, M. U., Kasim, R., & Martin, D. (2014). Positivist and non-positivist paradigm in social science research: Conflicting paradigms or perfect partners? *Journal of Management and Sustainability*, 4(3), 79-95.
- Alkhalwaldeh, N., & Menchaca, M. (2014). Barriers to utilizing ICT in education in Jordan. *International Journal on E-Learning*, 13(2), 127-155.
- Al-Mobaideen, H. O. (2009). *Assessing information and communication technology in Jordanian universities: building critical success factors'(CSF) model of ICT diffusion.* (Unpublished Doctoral thesis). Metropolitan University, Leeds.
- Almobarraz, A. (2007). *Perceived attributes of diffusion of innovation theory as predictors of internet adoption among the faculty members of Imam Mohammed Bin Saud University.* (Unpublished Doctoral thesis). University of North Texas, Denton.

- Alnujaidi, S. A. (2008). *Factors influencing english language faculty members' adoption and integration of Web-Based Instruction (WBI) in Saudi Arabia* (Unpublished Doctoral thesis). University of Kansas.
- Al-Qeisi, K.I. (2009). *Analyzing the use of UTAUT model in explaining an online behaviour: Internet banking adoption* (Unpublished PhD thesis, Brunel University). Retrieved 12 September 2014 from <http://bura.brunel.ac.uk/handle/2438/3620>
- Al-Shafi, S., Weerakkody, V., & Janssen, M. (2009). Investigating the adoption of eGovernment services in Qatar using the UTAUT model. *AMCIS 2009 Proceedings*, 260.
- Alrawashdeh, T. A., Muhairat, M. I., & Alqatawnah, S. M. (2012). Factors affecting acceptance of web-based training system: using extended UTAUT and structural equation modeling. *International Journal of Computer Science, Engineering and Information Technology (IJCEIT)*, 2(2), 45-54.
- Al-Senaidi, S. (2009). *An investigation of factors affecting omani faculty members' adoption of information and computing technology* (Ph.D thesis, University of North Texas).
- Al Saif, A. A. (2005). *The motivating and inhibiting factors affecting the use of Web-based instruction at the University of Qassim in Saudi Arabia*. (Unpublished PhD thesis). Wayne State University, Michigan.
- Al-Senaidi, S., Lin, L., & Poirot, J. (2009). Barriers to adopting technology for teaching and learning in Oman. *Computers and Education*, 53(3), 575-590.
- Al-Shafi, S. and Weerakkody, V. (2010). Factors affecting e-government adoption in the state of Qatar”, Paper Presented at European and Mediterranean Conference systems, April 12-13 2010, UAE, Abu Dhabi.
- Al-Shafi, S., & Weerakkody, V. (2009). The use of wireless internet parks to facilitate adoption and diffusion of e-government services: An empirical study in Qatar. *Proceedings of the 14th Americas Conference on Information Systems (AMCIS 2008)*, Toronto, Ontario.
- Alshehri, M., Drew, S., Alhussain, T., & Alghamdi, R. (2012). The Effects of Website Quality on Adoption of E-Government Service: An Empirical Study Applying UTAUT Model Using SEM. *arXiv preprint arXiv:1211.2410*. Retrieved 16 November 2015 from <https://scholar.google.co.za/scholar?q=Alshehri>
- Altman, D. G., & Bland, J. M. (1998). Generalisation and extrapolation. *Bmj*, 317(7155), 409-410.
- Altun, A., Gulbahar, Y., & Madran, O. (2008). Use of a content management system for blended learning: perceptions of pre-service teachers. *Turkish Online Journal of Distance Education*, 9(4), 138-153.
- Altun, S. A., Kalayci, E., & Avci, U. (2011). Integrating ICT at the faculty level: A case study. *Turkish Online Journal of Educational Technology*, 10(4), 230-240.

- Al-Zahrani, A. (2015). The Place of Technology Integration in Saudi Pre-Service Teacher Education: Matching Policy with Practice. *Turkish Online Journal of Educational Technology-TOJET*, 14(1), 151-162.
- Al-Zaidiyeen, N., Mei, L., & Fook, F. (2008). In-Service teachers' attitudes towards the use of information and communication technology in teaching practice: The case of Jordan. *Proceeding of Paper presented at the the 2nd International Malaysian Educational Technology Convention*. Kuantan, Pahang Darul Makmur, Malaysia.
- Alzaza, N. S. (2012). Opportunities for utilizing mobile learning services in the Palestinian higher education. *International Arab Journal E-Technology*, 2(4), 216-222.
- American Educational Research Association (2011). Code of Ethics American Educational Research Association Approved by the AERA Council. Retrieved 5 September 2015 from <http://c.yumcdn.com/sites/www.weraonline.org/resource/resmgr/general/aera.pdf>
- Armida, E. (2008). *Adoption process for VOIP: The influence of trust in the UTAUT model*. (Pd.D thesis, Purdue University).
- Anandarajan, M., Igarria, M., & Anakwe, U. P. (2002). IT acceptance in a less-developed country: A motivational factor perspective. *International Journal of Information Management*, 22(1), 47-65.
- Anderson, J. E., Schwager, P., & Kerns, R. (2006). The drivers of acceptance of tablet PCs by faculty in a college of business. *Journal of Information Systems Education*, 17 (4), 429-440.
- Anderson, J., & Schwager, P. (2004, February). SME adoption of wireless LAN technology: Applying the UTAUT model. *Proceedings of the Southern Association for Information System*, pp. 39-43. Savannah, Georgia.
- Anderson, J. (1997). Integrating ICT and Other Technologies in Teacher Education: Trends, issues and guiding principles. *Infotech Trends*, 33-35.
- Andoh, B. (2012). An exploration of teachers' skills, perceptions and practices of ICT in teaching and learning in the Ghanaian second-cycle schools. *Contemporary Education Technology*, 3(1), 36-49.
- Ani, O. E (2013). *Accessibility and utilization of electronic information resources for research and its effect on productivity of academic staff in selected Nigerian universities between 2005 and 2012*. (Unpublished PhD Thesis). University of South Africa, Pretoria.
- Anunobi, V. N. (2015). A study of the Information and Communication Technology use among student-teachers in universities in North Central Nigeria. *Information and Knowledge Management*, 5(1), 106-111.
- Aqili, S. V., & Nasiri, B. (2010). Technology and the need for media literacy education in the twenty-first century. *European Journal of Social Sciences*, 15(3), 227-246.
- Archibong, I. A., & Effiom, D. O. (2009). ICT in University Education: Usage and challenges among academic staff. *Africa Research Review*, 3(2), 404-414.

- Archibong, I. A., Ogbiji, J., & Anijaobi-Idem, F. (2010). ICT competence among Academic staff in universities in Cross Rivers State, Nigeria. *Computer and Information Science*, 3(4), 109-115.
- Arekete, S., Ifinedo, P., & Akinnuwesi, B. A. (2014, October). Antecedent factors to end-users' symbolic acceptance of enterprise systems: An analysis in Nigerian organizations. In *Adaptive Science & Technology (ICAST), 2014 IEEE 6th International Conference* (pp. 1-8). IEEE.
- Arias, S., & Clark, K.A. (2007). Instructional technology in developing countries: A contextual analysis approach. *Technology Trends*, 48(4), 52-70.
- Arnett, M. R., Loewen, J. M., & Romito, L. M. (2013). Use of social media by dental educators. *Journal of Dental Education*, 77(11), 1402-1412.
- Arroway P., Davenport, E., Xu, G. and Updegrove, D, (2010). EDUCAUSE core data service fiscal year 2009 summary report. Boulder, CO: EDUCAUSE.
- Asiri, M. J., Mahmud, R., Bakar, K. A., & bin Mohd Ayub, A. F. (2012). Factors influencing the use of Learning Management System in Saudi Arabian higher education: A theoretical framework. *Higher Education Studies*, 2(2), 125-137.
- Askar, P., Usluel, Y. K. & Mumcu, F. K. (2006). Logistic regression modeling for predicting task- related ICT use in teaching. *Educational Technology & Society*, 9(2), 141-151.
- Association of African Universities (2009). Guidelines for institutional self-assessment of ICT maturity in African Universities. Retrieved 24 July 2015 from <http://rc.aau.org/files/english/documents/ICT-GUID.pdf>
- Association of African Universities (AAU) on ICT (2000). Technical Experts Meeting Report, May 17-19, 2000. Tanzania: University of Dar Es Salaam. Retrieved 15 November 2015 from file:///C:/Users/User/Downloads/aau-ictreport.htm
- Association of American Colleges and Universities (2009). Shaping faculty roles in a time of change: leadership for student learning conference. Retrieved 5 September 2015 from <http://www.aacu.org/meetings/faculty/index.cfm>
- Association of College and Research Libraries (ACRL) Research Planning and Review Committee, (2010). 2010 top ten trends in academic libraries: a review of the current literature. *College & Research Libraries News*, 71. Retrieved 6 August 2015 from <http://crln.acrl.org/content/71/6/286.short>
- Attis, J. (2014). *An investigation of the variables that predict teacher e-learning acceptance* (Doctoral dissertation, Liberty University). Retrieved 12 November 2015 from <http://digitalcommons.liberty.edu/cgi/viewcontent.cgi?>
- Attuquayefio, S. N. & Addo, H. (2014). Review of obstacles which inhibit ICT adoption in Higher Education. *European Scientific Journal*, 10(13), 464-470.
- Aufderheide, P. (1993). *Media Literacy. A Report of the National Leadership Conference on Media Literacy*. Aspen Institute, Communications and Society Program. Retrieved 10 November 2015 from <http://eric.ed.gov/?id=ED365294>

- Avidov-Ungar, O., & Iluz, I. E. (2014). Levels of ICT integration among teacher educators in a teacher education academic college. *Interdisciplinary Journal of E-Learning and Learning Objects*, 10, 195- 216.
- Ayoola, N. O, Ikuenomore, M. G., & Eyengho, T. T. (2010). Adoption of Information and Communication Technology (ICT) in the implementation of primary education programmes in Nigeria. *Multidisciplinary Journal of Research Development*, 15(3), 1-6.
- Babbie, E. R., & Mouton, J. (2001). *The practice of social research*. Oxford: Oxford University Press.
- Babbie, E., & Mouton, J. (2002). *The practice of social research*. Belmont, CA: Wadsworth Group.
- Babić, S. (2012). Factors that influence academic teacher's acceptance of e-learning technology in blended learning environment. *E-Learning-Organizational Infrastructure and Tools for Specific Areas*, 3-18.
- Badau, K. M., & Sakiyo, J. (2013). Assessment of ICT teachers' competence to implement the new ict curriculum in North Eastern Nigeria. *Journal of Education and Practice*, 4(27), 10-20.
- Bagozzi (2007). The legacy of technology acceptance model and a proposal for paradigm shift. *Journal of the Association for Information Systems*, 8(4), 244-254.
- Bajaj, A. (2000). A study of senior information systems manager's decision models in adopting new computing architectures. *Journal of the Association for Information Systems*, 1(4), 1-56.
- Bakr, S. M. (2011). Attitudes of Egyptian teachers towards computers. *Contemporary Educational Technology*, 2(4), 308-318.
- Balash, F., Yong, Z., & Bin Abu, B. (2011). Lecturers and educational technology: Factors affecting educational technology adoption in teaching. *Proceedings of the 2nd International Conference on Education and Management Technology. IPEER*, 13. IACSIT Press, Singapore.
- Ball, D., & Levy, Y. (2009). Emerging Educational Technology: Assessing the Factors that Influence Instructors' Acceptance in Information Systems and Other Classrooms. *Journal of Information Systems Education*, 19(4), 431,443.
- Ball, D. M., & Levy, Y. (2008). Emerging educational technology: Assessing the factors that influence instructors' acceptance in information systems and other classrooms. *Journal of Information Systems Education*, 19(4), 431-443.
- Baltaci-Goktalay, S., & Ocak, M. A. (2006). Faculty adoption of online technology in higher education. *The Turkish Online Journal of Educational Technology*, 5(4), 37-43.
- Bamiro, I. A. (2012). The Nigerian university system: The challenge of building world class institutions in O.O. Adebayo (Ed.), *Public Relations, Advertising and Marketing (PAM) Journal*, 33(2), 54-68.

- Bandyopadhyay, K., & Fraccastoro, K. A. (2007). The effect of culture on user acceptance of information technology. *Communications of the Association for Information Systems, 19*(1), 522-543.
- Barakat, Z. (2008). The reality of usage of the Internet in academic research by the teaching members at the Palestinian universities. *A paper submitted to the Fourth international conference on Cairo University first anniversary on December* (pp.16-18). Cairo University
- Barbara, K., & Shari, L. P. (2002). Principles of survey research Part 5: Populations and samples. *Software Engineering Notes, 27*(5), 17-20.
- Barrette, C. M. (2015). Usefulness of technology adoption research in introducing an online workbook. *System, 49*, 133-144.
- Bashorun, M. T., Isah, A., & Adisa, M. Y. (2011). User perception of electronic resources in the University of Ilorin, Nigeria (UNILORIN). *Journal of Emerging Trends in Computing and Information Sciences, 2*(11), 554-562.
- Bates, A. W. (2000). *Managing technological change: Strategies for college and university leaders*. San Francisco: Jossey-Bass.
- Bates, T. (2009). New challenges for universities: Why they must change. In U.D. Ehlers & D. Schneckenberg (Eds.), *Changing cultures in higher education* (pp. 40-50). New York: Springer International.
- Beckers, J. J., Wicherts, J. M., & Schmidt, H. G. (2007). Computer anxiety: Trait or state? *Computers in Human Behavior, 23*(6), 2851-2862.
- Becking, S. K. (2011). Instructor technology use: A mixed methods investigation. Retrieved 7 May 2014 from <http://digitalcommons.unl.edu/cehsedaddiss/61>
- BECTA (2004). A review of the research literature on barriers to the uptake of ICT by teachers. Retrieved 10, September 2014, from http://partners.becta.org.uk/page_doc
- Beetham, H. (2010). Review and Scoping study for a cross-JISC learning and digital literacies programme. *JISC. 2010* [interactive]. Retrieved 14 November 2014 from <http://www.jiscac.uk/media/documents/programmes/elearning/DigitalLiteraciesReview.pdf>
- Bennett, J. & Bennett, L. (2003). A review of factors that influence the diffusion of innovation interventions. *Journal of Information Technology, 39*, 273-315.
- Berg B. L. (1998). *Qualitative research methods for the social sciences*. Boston, MA: Allyn and Bacon.
- Bergeron, F., Rivard, S., & De Serre, L. (1990). Investigating the support role of the information center. *MIS Quarterly, 14*(3), 247-259.
- Beyers, L. J. E., & Hlala, S. (2015). E-learning evaluation in the Department of Education Limpopo Province. Retrieved 14 November 2014 from <http://krepublishers.com/02-Journals/JC/JC-06-0-000-15-Web/JC-06-1-000-15-abst-pdf>

- Bhandarkar, P. C., & Wilkinson, T. S. (2010). *Methodology and techniques of social research*. Retrieved 15 October from <http://0-site.ebrary.com.oasis.unisa.ac.za/lib/unisa>
- Bhattacharjee, A. (2012). Social science research: Principles, methods, and practices. Textbooks collection Book 3. Retrieved 16 July 2015 from http://scholarcommons.usf.edu/oa_textbooks/3
- Bhattacharjee, A., & Premkumar, G. (2004). Understanding changes in belief and attitude toward information technology usage: A theoretical model and longitudinal test. *MIS Quarterly*, 229-254.
- Bhattacharya, I., & Sharma, K. (2007). India in the knowledge economy: an electronic paradigm. *International Journal of Educational Management*, 21(6), 543-568.
- Bickman, L., & Rog, D. (2009). Applied research design: A practical approach. In L. Bickman & D. Rog (Eds.), *Handbook of Applied Social Research Methods* (pp. 3-43). Thousand Oaks, CA: Sage
- Biddiscombe, R. (2002). Learning support professionals: the changing role of subject specialists in UK academic libraries. *Program*, 36(4), 228-235.
- Birch, A. (2009). *Preservice teachers' acceptance of information and communication technology integration in the classroom: Applying the Unified Theory of Acceptance and Use of Technology model* (Unpublished Ph.D thesis). University of Victoria. Retrieved 17 October 2015 from <http://dspace.library.uvic.ca:8080/handle>
- Birch, A., & Irvine, V. (2009). Preservice teachers' acceptance of ICT integration in the classroom: applying the UTAUT model. *Educational media international*, 46(4), 295-315.
- Birmingham, D., & Wilkinson, P. (2003). *Using research instruments: A guide for researchers*. New York: Routledge Falmer.
- Blaikie, N. (2004). Positivism. In M. Lewis-Beck, A. Bryman, & T. Liao (Eds.), *Encyclopedia of social science research methods* (pp. 837-839). Thousand Oaks, CA: Sage.
- Blankenship, S. E. (1998). *Factors related to computer use by teachers in classroom instruction* (Doctoral Dissertation). Virginia Polytechnic Institute and State University. Retrieved 7 April, 2014 from <http://scholar.lib.vt.edu/theses/available/etd->
- Blurton, C. (1999). New directions of ICT-use in education. Retrieved 5 August 2015 from <http://www.unesco.org/education/educprog/lwf/dl/edict.pdf>
- Bodgan, R. C., & Biklin, S. K. (1998). *Qualitative research for education: an introduction to theory and methods* (3rd ed.). Boston: Allyn and Bacon.
- Bøe, T., Gulbrandsen, B., & Sørøbø, Ø. (2015). How to stimulate the continued use of ICT in higher education: integrating information systems continuance theory and agency theory. *Computers in Human Behaviour*, 50, 375-384.

- Bonsu, K. A., Duodu, A., Ansere, J. A., & Djang-Fordjour, K. T. (2013). The challenges and prospects of ICTs in teaching and learning in Sunyani Polytechnic, Ghana. *CAPA Scientific Journal*, 1(1), 12-17.
- Bordbar, F. (2010). English teachers' attitudes toward computer-assisted language learning. *International Journal of Language Studies*, 4 (3), 27-54.
- Bowen, W. G. (2000). At a slight angle to the universe: the university in a digitized, commercialized age. Retrieved 10 September 2014 from <http://arl.cni.org/newsltr/216>
- Boyce, B. R., & Kraft, D. H. (1985). Principles and theories in information science. In M. E. Williams, (Ed.), *Annual Review of Information Science and Technology*, vol. 20 (pp. 153-78). Medford, NJ: Knowledge Industry publications.
- Bradford, M., & Florin, J. (2003). Examining the role of innovation diffusion factors on the implementation success of enterprise resource planning systems. *International Journal of Accounting Information Systems*, 4(3), 205-225.
- Brink, H., van der Walt, C., & van Rensburg, G. (2012). *Fundamentals of research methodology for healthcare professionals* (3rd ed.). Cape Town: Juta.
- Brooks, L. (2008). *An analysis of factors that affect faculty attitudes toward a blended learning environment*. (Unpublished PhD dissertation). Faculty of the College of Education, TUI University, California.
- Brown, C., Thomas, H., van der Merwe, A., & van Dyk, L. (2008). The Impact of South Africa's ICT infrastructure on higher education. In *Proceedings of the 3rd International Conference on e-Learning* (p. 69). Academic Conferences Limited.
- Brown, S. A., Dennis, A. R., & Venkatesh, V. (2010). Predicting collaboration technology use: integrating technology adoption and collaboration research. *Journal of Management Information Systems*, 27(2), 9-54.
- Browne T., Jenkins, M. and Walker, R. (2006). A longitudinal perspective regarding the use of VLEs by higher education institutions in the United Kingdom. *Interactive Learning Environments*, 14, 177-192.
- Bryman, A. (1989) *Research methods and organisation studies*. London: Unwin Hyman.
- Bryman, A. (2004) *Social Research Methods* (2nd ed.). Oxford: Oxford University Press.
- Bryman, A. (2008). *Social research methods* (3rd ed.). Oxford: Oxford University Press.
- Bryman, A. (2012). *Social research methods* (5th ed.). Oxford: Oxford University Press
- bt Osman, R., Choo, P. S., & Rahmat, M. K. (2013). Understanding student teachers' behavioural intention to use technology: Technology Acceptance Model (TAM) validation and testing. *International Journal of Instruction*, 6(1), 89-104.
- Buabeng-Andoh, C. (2012). Factors influencing teachers' adoption and integration of information and communication technology into teaching: A review of the literature. *International Journal of Education and Development using Information and Communication Technology*, 8(1), 136-155.

- Buarki, H. (2015). ICT skills evaluation of faculty members in Kuwait; *Information Development*, <http://idv.sagepub.com/content/early/2015/01/29/0266666914568796.full>
- Buchanan, T., Sainter, P., & Saunders, G. (2013). Factors affecting faculty use of learning technologies: Implications for models of technology adoption. *Journal of Computing in Higher Education*, 25, 1-11.
- Burnard, P., Gill, P., Stewart, K., Treasure, E., & Chadwick, B. (2008). Analysing and presenting qualitative data. *British Dental Journal*, 204(8), 429-432.
- Burns, N., & Grove, S. K. (2003). *Understanding nursing research* (3rd ed.). Philadelphia: Saunders.
- Burns, N., & Grove, S. K. (2011). *Understanding nursing research* (5th ed.). Philadelphia: Saunders.
- Burns, R. B. (2000). *Introduction to research methods* (4th ed.). London: Sage
- Burrell, G., & Morgan, G. (1979). *Sociological paradigms and organizational analysis*. London, UK: Heinemann.
- Bussey, J. M., Dormody, T. J., & VanLeeuwen, D. (2000). Some factors predicting the adoption of technology education in New Mexico public schools. *Journal of Technology Education*, 12(1), 4-17.
- Butler, D. L., & Sellbom, M. (2002). Barriers to adopting technology. *Educause Quarterly*, 2, 22-28.
- Campanella, S., Dimauro, G., Ferrante, A., Impedovo, D., Impedovo, S., Lucchese, M. G., & Trullo, C. A. (2008). E-learning platforms in the Italian Universities: The technological solutions at the University of Bari. *WSEAS Transactions on Advances in Engineering Education*, 5(1), 1790-1799.
- Campbell, D., & Campbell, S. (2008, October). Introduction to regression and data analysis. In *StatLap Workshop Series* (pp. 1-15).
- Cariaga-Lo, L., Worthy Dawkins, P., Enger, R., Schotter, A., & Spence, C. (2010). Supporting the development of the professoriate. *Peer Review*, 12(3), 19-22.
- Casmar S. P. (2001). The adoption of computer technology by faculty in a college of education: An analysis of administrative planning issues (Doctoral dissertation, Washington State University, 2001). Retrieved 11 October 2014 from Proquest Digital Dissertations and Theses database. (Thesis No. 3025011).
- Cassidy, S and Eachus, P. (2002). Developing the computer user self-efficacy (CUSE) scale: Investigating the relationship between computer self-efficacy, gender and experience with computers. *Journal of Educational Computing Research*, 26(2), 169-189.
- Cavas, B., Cavas, P., Karaoglan, B., & Kisla, T. (2009). A study on science teachers' attitudes toward information and communication technologies in education. *The Turkish Online Journal of Educational Technology*, 8(2), 20-32.

- Czerniewicz, L., Ravjee, N. & Mlitwa, N. (2006) Information and Communication Technologies (ICTs) and South African higher education: Mapping the landscape. (Unpublished project report). Retrieved 5 November 2015 from <http://www.che.ac.za/>
- Chai, C. S. & Lim, C. P. (2011). The Internet and teacher education: Traversing between the digitized world and schools. *The Internet and Higher Education*, 14(1), 3-9.
- Chainda, A. M. (2011). *Third year students' perceptions of the use of ICT at a teacher training college in Namibia* (M. Phil Thesis, Stellenbosch). Retrieved from file:///C:/Users/User/Downloads/chainda_thirdyear_2011%20(2).pdf
- Chandran, V. (2013). Use and user perception of electronic information resources: A case study of Siva Institute of Frontier Technology, India. *Chinese Librarianship: an International Electronic Journal*, 36. Retrieved 11 October 2015 from <http://www.iclc.us/cliej/cl36chandran.pdf>
- Chang, I. C., Hwang, H. G., Hung, W. F., & Li, Y. C. (2007). Physicians' acceptance of pharmacokinetics-based clinical decision support systems. *Expert Systems with Applications*, 33(2), 296-303.
- Chang, S. C., & Tung, F. C. (2008). An empirical investigation of students' behavioural intentions to use the online learning course websites. *British Journal of Educational Technology*, 39(1), 71-83.
- Chatterjee, D. D., Pacini, C., & Sambamurthy, V. (2002). The shareholder-wealth and trading-volume effects of information technology infrastructure investments. *Journal of Management Information Systems*, 19(2), 7-42.
- Cheek, J. (2008). Research design. In L. M. Given (Ed.), *The Sage Encyclopaedia of qualitative research methods*. London: Sage, 1(2): 761-763.
- Cheek, D. W., & Agruso, S. (1995). Gender and equity issues in computer-based science assessment. *Journal of Science Education and Technology*, 4(1), 75-79.
- Chen, C. F., & Chao, W. H. (2011). Habitual or reasoned? using the Theory of Planned Behaviour, Technology Acceptance Model, and habit to examine switching intentions toward public transit. *Transportation Research Part F: Traffic Psychology and Behaviour*, 14(2), 128-137.
- Chen, C., Wu, J., and Yang, S.C. (2008). Accelerating the use of weblogs as an alternative method to deliver case-based learning. *International Journal on E-Learning*, 7(2), 331-349.
- Chen, J. L. (2011). The effects of education compatibility and technological expectancy on e-learning acceptance. *Computers & Education*, 57, 1501-1511.
- Chen, J. V., Yen, D. Y., & Chen, K. (2009). The acceptance and diffusion of the innovative smart phone use: a case study of a delivery service company in logistics. *Information & Management*, 46(4), 241-248.
- Chen, M. (2003). Factors affecting the adoption and diffusion of XML and web services standards for e-Business Systems. *International Journal of Human-Computer Studies*, 58 (3), 259-279.

- Cheok, M. L., & Wong, S. L. (2015). Predictors of e-learning satisfaction in teaching and learning for school teachers: a literature review. *International Journal of Instruction*, 8(1), 75-90.
- Cheung, C. M., Lee, M. K., & Chen, Z. (2002, January). Using the Internet as a learning medium: an exploration of gender difference in the adoption of FaBWeb. In *System Sciences, 2002. HICSS. Proceedings of the 35th Annual Hawaii International Conference on* (pp. 475-483). IEEE.
- Cheng, Y.-S., Yu, T.-F., Huang, C.-F., Yu, C., & Yu, C.-C. (2011). The Comparison of Three Major Occupations for User Acceptance of Information Technology: Applying the UTAUT Model. *iBusiness*, 3(2), 147-158.
- Chin, W. C., & Todd, P. A. (1995). On the use, usefulness and ease of use of structural equation modeling in MIS research: A note of caution. *MIS Quarterly*, 19(2), 237-246.
- Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information systems research*, 14(2), 189-217.
- Chiu, C. M., & Wang, E. T. (2008). Understanding web-based learning continuance intention: The role of subjective task value. *Information & Management*, 45(3), 194-201.
- Chiu, C. M., Huang, H. Y., & Yen, C. H. (2010). Antecedents of trust in online auctions. *Electronic Commerce Research and Applications*, 9(2), 148-159.
- Chizmar, J. F., & Williams, D. B. (2001). What do faculty want. *EDUCAUSE Quarterly*, 24(1), 18-24.
- Chowdhury, F. P. (2015). A comparison of instructional technology adoption at two campuses: a case study of a private university of Bangladesh. *Australian Journal of Business and Economic Studies*, 1(2), 15-30.
- Chu, K. (2013). Motives for participation in Internet innovation intermediary platforms. *Information Processing and Management*, 49, 945-953.
- Chua, S.L., Chen, D. & Wong, A.F.L. (1999) "Computer anxiety and its correlates: A meta-analysis", *Computers in Human Behavior*, 15, 609-623.
- Chukwunonso, F., & Oguike, M. C. (2013). An evaluation framework for new ICTs adoption in architectural education. *International Journal of Informatics and Communication Technology*, 2(3), 183-189.
- Chuttur, M. Y. (2009). Overview of the technology acceptance model: Origins, developments and future directions. *Working Papers on Information Systems*, 9(37), 9-37.
- Clark, A. M. (1998). The qualitative-quantitative debate: moving from positivism and confrontation to post-positivism and reconciliation. *Journal of Advanced Nursing*, 27, 1242-1249.

- Clark, K., & Kalin, S. (1996). Technostressed out? how to cope in the digital age. *Library Journal*, 121(13), 30-32.
- Clarke, C. (2003). Towards a unified e-learning strategy. *Department for Education and Skills, UK, Consultation Document*. Retrieved 15 April 2014 from <http://www.dfes.gov.uk/elearningstrategy/strategy.stm>
- Cocosila, M., Archer, N., & Yuan, Y. (2009). Early investigation of new information technology acceptance: a perceived risk - motivation model. *Communication of the Association of Information Systems*, 2 (5), 339-358.
- Cohen, L., & Manion, L. (1994). *Research methods in education* (4th ed.). London: Routledge.
- Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education* (6th ed.). London: Routledge.
- Collis B. (2000). Building evaluation of collaborative learning in to a www-based course: pedagogical and technical experience. *Indian Journal of Open Learning*, 1(1), 19-20.
- COM. (2003). Choosing to grow: knowledge, innovation and jobs in a cohesive society; Report to the Spring European Council, 21 March 2003 on the Lisbon Strategy of Economic, Social and Environmental renewal. Retrieved 15 June 2014 from http://europa.eu.int/comm/lisbon_strategy/pdf
- Compeau, D. R. & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS Quarterly*, 19(2), 189-211.
- Conner, M., & Norman, P. (2005). *Predicting health behaviour*. McGraw-Hill Education (UK).
- Creemers, B.P.M. (2002). From school effectiveness and school improvement to effective school improvement: Background, theoretical analysis, and outline of the empirical study. *Educational Research and Evaluation*. 8, 343-362.
- Creswell, J. W. (2014). *Research design: qualitative, quantitative, and mixed methods approach* (4th ed.). Thousand Oaks, CA: Sage.
- Creswell, J. W. (2009). *Research design: qualitative, quantitative, and mixed methods approach* (3rd ed.). Los Angeles: Sage.
- Creswell, J. W. (2008). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Thousand Oaks, CA: Sage.
- Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.). Thousand Oaks, CA: Sage.
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage.
- Creswell, J. W. (1998). *Qualitative inquiry and research design: choosing among five traditions*. Thousand Oaks, CA: Sage.

- Creswell, J. W. (1994). *Research design: Qualitative and quantitative approaches*. Thousand Oaks, Calif.: London: Sage.
- Creswell, J. W., & Plano Clark, V. L. (2007). Understanding mixed methods research. In J. W. Creswell & V. L. Plano Clark (Eds.), *Designing and conducting mixed methods research* (pp. 1-19). Thousand Oaks, CA. Sage.
- Creswell, J. W., & Zhang, W. (2009). The application of mixed methods designs to trauma research. *Journal of Traumatic Stress*, 22(6), 612-621.
- Crossan, F. (2003). Research philosophy: Towards an understanding. *Nurse Research* 11 (1), 46-55.
- Cruz, Y., Boughzala, I. & Assar, S. (2014). Technology acceptance and actual use with mobile learning: First stage for studying the influence of learning styles on the behavioural intention. *Twenty Second European Conference on Information Systems, Tel-Aviv 2014*, pp.1-16.
- Csapo, N., & Wilson, H. (2001). A study of business faculty preferences for teaching methods used and why. *Issues in Information Systems*, 2, 64-70.
- Cuban, L., Kirkpatrick, H., Peck, C. 2001. High access and low use of technologies in high school classrooms: Explaining an apparent paradox. *American Educational Research Journal*, 38(4), 813-834.
- Curbelo-Ruiz, A. M. (2003). Factors influencing faculty participation in web based distance education technologies. *HERMES*, 3(8), 1-9.
- Curran, C. (2004). Strategies for e-learning in universities. National Distance Education Centre and Dublin City University. Retrieved 15 October 2006 from <http://repositories.cdlib.org>
- Curry, A., & Moore, C. (2003). Assessing information culture-an exploratory model. *International Journal of Information Management*, 23, 91-110.
- Curtis, L., Edwards, C., Fraser, K. L., Gudelsky, S., Holmquist, J., Thornton, K., & Sweetser, K. D. (2010). Adoption of social media for public relations by nonprofit organizations. *Public Relations Review*, 36(1), 90-92.
- Dangani, U. B., & Mohammed, Z. (2009). Information and communication technology literacy among academics in Ahmadu Bello University Zaria. *Samaru Journal of Information Studies*, 9(2), 15-22.
- Dansarki, I. D., Ayub, A. F. M., & Kadir, S. A. (2015). Hypothetical prediction of ICT usage behaviour among business education teachers in Nigerian Colleges of Education. *Australian Journal of Sustainable Business and Society*, 1(2), 33-40.
- Dasgupta, S., Haddad, M., Weiss, P., & Dan Bermudez, E. (2007). User acceptance of case tools in system analysis and design: An empirical study. *Journal of Informatics Education Research*, 9(1), 51-78.

- Davis, F. D. (1986). *A technology acceptance model for empirically testing new end-user information systems*. (Unpublished PhD Thesis). Massachusetts Institute of Technology, Massachusetts.
- Davis F. D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly*, 13(3), 475-487.
- Davis, F. D. (1993). User acceptance of information technology: system characteristics, user perceptions and behavioral impacts. *International Journal of Man-Machine Studies*, 38(3), 475-487.
- Davis, F. D. & Venketesh V. (1996). A critical assessment of potential measurement biases in the technology acceptance model: Three experiments. *International Journal Human-Computer studies*, 45(1), 19-45.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982-1003.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology*, 22 (14), 1111-1132.
- De Vos A. S. (2005). *Research at grass roots* (3rd ed.). Pretoria: Van Schaik.
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, 19(4), 9-30.
- Den Hoogen, I. (2010). Early adopters and power users. *Forbes/INSIGHTS*, 9-11.
- Deng, S., Liu, Y., & Qi, Y. (2011). An empirical study on determinants of web based question-answer services adoption. *Online Information Review*, 35(5), 789-798.
- Denzin, N. K., & Lincoln, Y. S. (2005). The discipline and practice of qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 1-32). Thousand Oaks, CA: Sage.
- Department of Education (DoE). (2001). The national plan for higher education online Retrieved 15 April, 2014 from <http://www.polity.org.za/html/govdocs/misc/higheredu>
- Devaraj, S., Fan, M., & R. Kohli (2002). Antecedents of B2C channel satisfaction and preference: validating e-commerce metrics. *Information Systems Research*, 12(3), 316-333.
- deVaus, D.A. (2002). *Surveys in social science research* (5th ed.). London: Routledge.
- De Vos, A.S., Fouché, C.B. & Venter L. (2002). Quantitative data analysis and interpretation in A. S. De Vos (Ed.), *Research at grass roots: For the social sciences and human service professions* (2nd ed.). Pretoria: Van Schaik Publishers.
- DiMaggio, P., & Hargittai, E. (2001). *From the digital divide to digital inequality: Studying internet use as penetration increases' working paper* 15, Summer 2001, pp. 1-23.

- Dick, W. & Carey, J.O. (2001). *The systematic design of instruction*. New York: Longman.
- Digital Divide Network. (2004). Digital divide basics. Retrieved 15 September 2014 from <http://www.digitaldividenetwork.org/content/sections/index.cfm?key=2>
- Dika, S. L., & Singh, K. (2002). Applications of social capital in educational literature: A critical synthesis. *Review of Educational Research*, 72(1), 31-60.
- Dillon, A., & Morris, M. G. (1996). User Acceptance of information technology: Theories and models. *Annual Review of Information Science and Technology*, 3(1), 3-32.
- Djajalaksana, Y. M. (2011). *A national survey of instructional strategies used to teach information systems courses: An exploratory investigation* (Unpublished Doctoral dissertation). University of South Florida.
- Dolničar, V., Prevodnik, K., & Vehovar, V., (2014). Measuring the dynamics of information societies: Empowering stakeholders amid the digital divide. *The Information Society*, 30(3), 212-228.
- Dooley, K. E. (1999). Towards a holistic model for the diffusion of educational technologies: An integrative review of educational innovation studies. *Educational Technology and Society*, 2(4), 35-45.
- Draper, N. and Smith, H. (1981). *Applied Regression Analysis*, (2nd ed.). New York: John Wiley & Sons, Inc.
- Drennan, J., Kennedy, J., & Pisarski, A. (2005). Factors affecting student attitudes toward flexible online learning in management education. *The Journal of Educational Research*, 98(6), 331-340.
- Drent, M., & Meelissen, M. (2008). Which factors obstruct or stimulate teacher educators to use ICT innovatively? *Computers & Education*, 51, 187-199.
- Dulle, F .W., & Minishi-Majanja, M. K. 2011. The suitability of the Unified Theory of Acceptance and Use of Technology (UTAUT) model in open access adoption studies. *Information Development* 27(1), 32-45.
- Duyck, P., Pynoo, B., Devolder, P., Voet, T., Adang, L., Ovaere, D., & Vercruyse, J. (2010). Monitoring the PACS implementation process in a large university hospital discrepancies between radiologists and physicians. *Journal of Digital Imaging*, 23(1), 73-80.
- Dwivedi, Y. K., Rana, N. P., Chen, H., & Williams, M. D. (2011). A meta-analysis of the Unified Theory of Acceptance and Use of Technology (UTAUT). In *Governance and sustainability in information systems. Managing the transfer and diffusion of IT* (pp. 155-170). Springer Berlin Heidelberg.
- Dwivedi, Y. K., Williams, M. D., & Lal, B. (2008). The diffusion of research on the adoption and diffusion of information technology. In *Open IT-Based Innovation: Moving Towards Cooperative IT Transfer and Knowledge Diffusion* (pp. 3-22). Springer US.

- Eckhardt, A., Laumer, S., & Weitzel, T. (2009). Who influences whom? analyzing workplace referents' social influence on IT adoption and non-adoption. *Journal of Information Technology*, 24(1), 11-24.
- Edumadze, J. K. E., & Owusu, A. A. (2013). Use of Information and Communication Technology for teaching and learning in Ghanaian universities: Case of University of Cape Coast. *International Journal of Computing Academic Research (IJCAR)*, 2(6), 266-277.
- Egberongbe, H. S. 2011. The use and impact of electronic resources at the University of Lagos. *Library Philosophy and Practice*. Retrieved 14 September 2015 from <http://digitalcommons.unl.edu/libphilprac/472>
- Eisenberg, M.B., Lowe, C. A., & Spitzer, K. L. (2004). *Information literacy: Essential skills for the information age* (2nd ed.). Westport, Conn.: Libraries Unlimited.
- Elder, V. B., Gardner, E. P., & Ruth, S. R. (1987). Gender and age in technostress: Effects on white collar productivity. *Government Finance Review*, 3(6), 17-21.
- El-Gayar, O. F., & Moran, M. (2006). College students' acceptance of tablet PCs: An application of the UTAUT model. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.120.2667>
- Elias, S. M., Smith, W. L., & Barney, C. E. (2012). Age as a moderator of attitude towards technology in the workplace: Work motivation and overall job satisfaction. *Behaviour & Information Technology*, 31(5), 453-467.
- Elsaadani, A. P. D. M. (2012). Teaching Staff attitude toward ICT: Is gender a factor? *International Women Online Journal of Distance Education*, 1(2), 21-30.
- Elsammani, Z. A., Hackney, R., & Scown, P. (2003). SMEs adoption and implementation process of websites in the presence of change agents. In N. A. Al-Qirim (Ed.), *Electronic commerce in small to medium-sized enterprises: Frameworks, issues, and implications* (pp. 146-163). Hershey: IDEA Group Publishing.
- Elshafie, M. (2013). Research Paradigms: The novice researcher's nightmare. *Arab World English Journal (AWEJ)*, 4(2), 4-13.
- Elzawi, A., Kenan, T., Wade, S., & Pislaru, C. (2012) Bridging the digital divide and enhancing the quality of engineering research in Libyan Universities. In: *6th Conference on Quality in Middle East, 30 January - 2 February 2012, Hamdan*. Dubai: Bin Mohammed University.
- Ensafi, R., Zamiri, A., & Kahani, M. (2007). ICT Challenges in education: reflections from a developing country: Iran, with reference to the statistics from computer science students. Proceedings of the 2nd International Conference on Virtual Learning, Ferdowsi University, Mashhad, Iran.
- Erumban, A. A., & De Jong, S. B. (2006). Cross-country differences in ICT adoption: A consequence of culture. *Journal of World Business*, 41(4), 302-314.

- Etsebeth, E. E. (2013). Trialability, perceived risk and complexity of understanding as determinants of cloud computing services adoption. (Masters thesis, University of Pretoria) Retrieved from repository.up.ac.za/bitstream/handle/2263/29623/dissertation.
- Evans, N. D. (2014). *Predicting user acceptance of electronic learning at the University of Zululand* (Unpublished Ph.D thesis, University of Zululand, South Africa). Retrieved 11 July 2014 from <http://uzspace.uzulu.ac.za/handle/10530/1317>
- Everdingen, Y.V., & Wierenga, B. (2002) . Intra-firm adoption decisions: Role of inter-firm and intra-firm variables. *European Management Journal*, 20(6), 649-663.
- Falana, T. F. (2015). *Prospects and challenges of e-learning in Nigerian university education using National Open University of Nigeria Akure study center*. (Unpublished B.SC. project, Adekunle Ajasin University Akungba Akoko). Retrieved 8 August 2015 from <https://www.academia.edu/12141945>
- Faleyimu, O. I., Agbeja, B. O., & Akinyemi, O. (2013). State of forest regeneration in Southwest Nigeria. *African Journal of Agricultural*, 8(26), 3381-3383.
- Faqih, K. M., & Jaradat, M.-I. R. M. (2015). Assessing the moderating effect of gender differences and individualism-collectivism at individual-level on the adoption of mobile commerce technology: TAM3 perspective. *Journal of Retailing and Consumer Services*, 22, 37-52.
- Farahat, T. (2012). Applying the technology acceptance model to online learning in the Egyptian universities. *Procedia-Social and Behavioral Sciences*, 64, 95-104.
- Farrell, G. (2007). Survey of ICT in education in Kenya. Country reports. Survey of ICT and education in Africa (Vol. 2, p. 53). Washington, DC: infoDev/World Bank.
- Farrell, G., & Shafika, I. (2007). Survey of ICT and education in Africa: A summary report, based on 53 country surveys. Washington, DC: infoDev/World Bank.
- Fathema, N., Sutton, K. (2013). Factors influencing faculty members' Learning Management Systems adoption behavior: An analysis using the Technology Acceptance Model. *International Journal of Trends in Economics Management & Technology*, 2, 20-28.
- Feehan, P. E., Gragg, W. L., Havener, W. M., & Kester, D .D. (1987). Library and information science research: An analysis of the 1984 journal literature. *Library and Information Science Research*, 9, 173–185.
- Ferrari, A. (2012). Digital competence in practice: An analysis of frameworks'. JRC Technical Reports. Retrieved 3 August 2015 from <http://ftp.jrc.es/EURJRC68116.pdf>
- Fidani, A., & Idrizi, F. (2012). Investigating students' acceptance of a learning management system in university education: a structural equation modeling approach. *ICT Innovations 2012 Web Proceedings*, 311-320.
- Fink, A. (2009). *How to conduct surveys* (4th ed.). Thousand Oaks, CA: Sage.
- Fink, D., & Disterer, G. (2006). International case studies to what extent is ICT infused into the operations of SMEs? *Journal of Enterprise Information Management*, 19(6), 608-624.

- Finley, T. R. (2003). *A descriptive study of utilization of technology from a perspective of full-time faculty in Virginia's higher education teacher-education programs*. Available from Proquest Dissertations and Theses database (Thesis No. 3083800).
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behaviour: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Franklin, C. (2007). Factors that influence elementary teachers use of computers. *Journal of Technology and Teacher Education*, 15(2), 267-293.
- Fullan, M. (2001). *Leading in a culture of change*. San Francisco: Jossey Bass Wiley.
- Gadio C. (2001). *Exploring the gender impact of the world links program in some selected participating African countries: A qualitative approach*. World Links: Washington. Retrieved 14 April 2014 from <http://www.world-links.org>.
- Gage, N. L. (1989). The paradigm wars and their aftermath: A "historical" sketch of research on teaching since 1989. *Educational Researcher*, 18(7), 4-10.
- Gammill, T. (2005). Factors associated with faculty use of web-based instruction in higher education. Retrieved 7 April 2014 from <http://pubs.aged.tamu.edu/jae/pdf/Vol46/46-04-60.pdf>
- Gastel, B. (2012). Preparing the literature review section of a dissertation. Retrieved 17 September 2014 from <http://www.authoraid.info/resource-library/preparing-the-literature-review-section-of-a-dissertation>.
- Gates, K., Moore, J., Oberlin, J., Rusiecki, S., & Wascom, T. (2000). Equipping faculty for success with technology. In *EDUCAUSE 2000: Thinking IT through: Proceedings and Post-Conference Materials*. Nashville, Tennessee. Retrieved 11 November 2015 from <http://eric.ed.gov/?id=ED452798>
- Gautreau, C. (2011). Motivational factors affecting the integration of a Learning Management System by faculty. *Journal of Educators Online*, 8(1), 1-25.
- Gayathri, D & Sadik B. M. (2015). Support of e-resources for academicians to fulfill their information need-a study. *International Journal of Emerging Research in Management & Technology*, 4(3), 1-5.
- Ghalandari, K. (2012). The effect of performance expectancy, effort expectancy, social influence and facilitating conditions on acceptance of e-banking services in Iran: The moderating role of age and gender. *Middle-East Journal of Scientific Research*, 12(6), 801-807.
- Ghobakhloo, M., Zulkifli, N. B., & Aziz, F. A. (2010). The interactive model of user information technology acceptance and satisfaction in small and medium-sized enterprises. *European Journal of Economics, Finance and Administrative Sciences*, 19, 7-27.
- Gibbone, A., Rukavina, P., & Silverman, S. (2010). Technology integration in secondary physical education: Teachers' attitudes and practice. *Journal of Educational Technology Development and Exchange*, 3(1), 27-42.

- Giddings, L.S (2006). Mixed-methods research: Positivism dressed in drag? *Journal of Research in Nursing*, 11(3), 195-203.
- Given, L. M. (2008). *The Sage encyclopedia of qualitative research methods* (Vols. 1-2). London, UK: Sage.
- Gögüs, A., Nistor, N., & Lerche, T. (2012). Educational technology acceptance across cultures: A validation of the unified theory of acceptance and use of technology in the context of Turkish national culture. *The Turkish Online Journal of Educational Technology*, 11(4), 384-408.
- Gombachika, H., & Kanjo, C. (2008). Use of ICT in science and engineering: A case of University of Malawi Retrieved 11 September 2014 from <https://scholar.google.co.za/scholar?q=Gombachika%2C>
- Gomes, C. (2005). Integration of ICT in science teaching: A study performed in Azores, Portugal. *Recent Research Developments in Learning Technologies*, 13(3), 63-71.
- Goodhue, D. L. (1995). Understanding user evaluations of information systems. *Management Science*, 41(12), 1827-1844.
- Gorard, G. (2004). *Combining methods in educational and social research*. Berkshire: Open University Press.
- Goyal, E., Purohit, S., & Bhagat, M. A. N. J. U. (2010). Factors that affect information and communication technology usage: a case study in Management Education. *Journal of Information Technology Management*, 21(4), 38-57.
- Grant, A., & Meadows, J. (2002). *Communication Technology Update* (8th ed.). Boston, MA: Focal Press.
- Groff, J. (2013). Technology-rich innovative learning environments. *Innovative Learning Environments*, 1-30.
- Gruzd, A., Staves, K., & Wilk, A. (2012). Connected scholars: examining the role of social media in research practices of faculty using the UTAUT model. *Computers in Human Behaviour*, 28, 2340–2350.
- Guba, E. G. (1990). *The paradigm dialog*. California: Sage.
- Guha, S. (2000). Are We all technically prepared? Teachers' perspective on the causes of comfort or discomfort in using computers at elementary grade teaching. Retrieved 13 August 2014 from <http://www.eric.ed.gov/?id=ED456101>
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp.105-117). Thousand Oaks, CA: Sage.
- Guba, E. G., & Lincoln, Y. S. (1982). Epistemological and methodological bases of naturalistic inquiry. *Educational Communication and Technology*, 30(4), 233-252.

- Gupta, B., Dasgupta, S., & Gupta, A. (2008). Adoption of ICT in a government organization in a developing country: An empirical study. *The Journal of Strategic Information Systems*, 17(2), 140-154.
- Guy, R. (2012). The use of social media for academic practice: A review of literature. *Kentucky Journal of Higher Education Policy and Practice*, 1(2), 7, 1-20.
- Gyamfi, A. (2005). Closing the digital divide in Sub-Saharan Africa: Meeting the challenges of the information age. *Information Development*, 21(1), 22-30.
- Hafkin N., & Taggart N. (2001). *Gender, information technology and developing countries: An analytic study*. Washington, DC: WID Office USAID.
- Hagenson, L., & Castle, D. (2003). The Integration of Technology into teaching by university college of education faculty. *Society for Information Technology and Teacher Education International Conference 203(1)*, 947-952.
- Halidu, S.G. (2014). Assessment of Funding of Federal Universities in Nigeria: A Study of the Ahmadu Bello University and University of Ibadan, 2005-2013, being a paper presented at the Department of public Administration. Ahmadu Bello University, Zaria, April, 2014.
- Hall, D., & Mansfield, R. (1975). Relationships of age and seniority with career variables of engineers and scientists. *Journal of Applied Psychology*, 60(2), 201-210.
- Hardgrave, B. C., & Johnson, R. (2003). Toward an information systems development acceptance model: the case of object-oriented systems development. *Engineering Management, IEEE Transactions on*, 50(3), 322-336.
- Hardgrave, B. C., Davis, F. D., & Riemenschneider, C. K. (2003). Investigating determinants of software developers' intentions to follow methodologies. *Journal of Management Information Systems*, 20(1), 123-151.
- Hare, H. 2007, 'ICT in education in Tanzania', in G. Farrell, S. Isaacs & M. Trucano (ed.), *Survey of ICT and Education in Africa: 53 Country Reports*, DC: InfoDev/World Bank, Washington.
- Hariri, A., & Roberts, P. (2015). Adoption of innovation within universities: proposing and testing an initial model. *Creative Education*, 6, 186-203.
- Haron, H., Abbas, W. F., & Rahman, N. A. A. (2012). The adoption of blended learning among Malaysian academicians. *Procedia Social and Behavioral Sciences*, 67, 175-181.
- Harvey C, A. (2012). State, adoption and use of ICTs by students and academic staff at Mzuzu University, Malawi. *Program*, 46(4), 364-382.
- Hasan, B. (2003). The influence of specific computer experiences on computer self efficacy beliefs. *Computers in Human Behaviour*, 19(4), 443-450.
- Hasan, B., & Ahmed, M. U. (2010). A path analysis of the impact of application-specific perceptions of computer self-efficacy and anxiety on technology acceptance. *Journal of Organizational and End User Computing*, 22(3), 82-95.

- Hashim, J. (2015). Information communication technology (ICT) adoption among SME owners in Malaysia. *International Journal of Business and Information*, 2(2), 221-240.
- Haythornthwaite, C., & Wellman, B. (1998). Work, friendship, and media use for information exchange in a networked organization. *Journal of the American Society for Information Science and Technology*, 49(12), 1101-1114.
- Heerink, M., Kröse, B., Evers, V., & Wielinga, B. (2006, September). The influence of a robot's social abilities on acceptance by elderly users. In *Robot and Human Interactive Communication, 2006. ROMAN 2006. The 15th IEEE International Symposium on* (pp. 521-526). IEEE.
- Henning, E., van Rensburg, W., & Smit, B. (2004). *Finding your way in qualitative research*. Pretoria: Van Schaik Publishers.
- Hernandez-Ramos, P. (2005). If not there, where? Understanding teachers use of technology in Silicon Valley schools. *Journal of Research on Technology in Education*, 38(1), 39-64.
- Hess, R. D. (2004). How to write an effective discussion. *Respiratory Care*, 49(10), 1238-1241.
- Higher Education Funding for England (HEFCE) (2010). National student survey: findings and trends 2006 to 2009 HEFCE. Retrieved 13 August 2014 from <http://www.hefca.ac.uk/pubs/hefce/2010/10-18/10-18.pdf>
- Hilal, A. H., & Alabri, S. S. (2013). Using NVIVO for data analysis in qualitative research. *International Interdisciplinary Journal of Education*, 2(2), 181-186
- Hjørland, B. (1998). Theory and meta theory of information science: A new interpretation. *Journal of Documentation*, 54(5), 606-621.
- Hoffman, L. W. (1972). Early childhood experiences and women's achievement motives. *Journal of Social Issues*, 28(2), 129-155.
- Hofstede, G., 1980. *Cultural consequences: International differences in work related values*. Beverly Hills: Sage.
- Hofstede, G., 1993. Cultural constraints in management theories. *The Academy of Management Executive*, 7(1), 81-94.
- Holloway, I. (1997). *Basic concepts for qualitative research*. Oxford: Blackwell Science.
- Hood, P. (2002). Perspectives on knowledge utilization in education. Retrieved 2 September 2015 from http://www.wested.org/online_pubs/perspectives.pdf
- Hora, M., & Holden, J. (2013). Exploring the role of instructional technology in course planning and classroom teaching: Implications for pedagogical reform. *Journal of Computing in Higher Education*, 25(2), 68-92.
- Howard, G. S., & Mendelow, A. L. (1991). Discretionary use of computers: An empirically derived explanatory model. *Decision Sciences*, 22(2), 241-265.

- Howe, K., & Moses, M. (1999). Ethics in educational research. *Review of Research in Education, 24*, 21-60.
- Hsbollah, H. M., & Idris, K. (2009), E-learning adoption: The role of relative advantages, trialability and academic specialisation, *Campus-Wide Information Systems, 26*(1), 54-70.
- Hsiao-Hui, H. (2012). The acceptance of moodle: an empirical study based on UTAUT *Creative Education, 3*,44-46.
- Hue, L.T., & Jalil, H. A. (2013). Attitudes towards ICT integration into curriculum and usage among university lecturers in Vietnam. *International Journal of Instruction, 6*(2), 53-66.
- Hussein, H. B (2011). Attitudes of Saudi universities faculty members towards using Learning Management System (JUSUR). *Turkish Online Journal of Educational Technology (TOJET), 10*(2), 43-53.
- Hymes, D. (1974). *Foundations in Sociolinguistics: An ethnographic approach*. Philadelphia: University of Pennsylvania Press.
- Iahad, N. A, Rahim, A., Zairah, N., & Oye, N. D. (2012). Acceptance and usage of ICT by university academicians using UTAUT model: A case study of University of Port Harcourt, Nigeria. *Journal of Emerging Trends in Computing and Information Sciences, 3*(1), 81-89.
- Ifinedo, P. (2012, January). Technology acceptance by health professionals in Canada: An analysis with a modified UTAUT model. In *System Science (HICSS), 2012 45th Hawaii International Conference on* (pp. 2937-2946). IEEE.
- Igbaria, M., Iivari, J., & Maragahh, H., 1995. Why do individuals use computer technology? A Finnish case study. *Information & Management, 29*(5), 227-238.
- Ijeoma, A. A., Joseph, E. O., & Franca, A. (2010). ICT competence among academic staff in universities in Cross Rivers State, Nigeria. *Computer and Information Science, 3*(4), 109-115.
- Im, I., Hong, S., & Kang, M. S. (2011). An international comparison of technology adoption: testing the UTAUT model. *Information & Management, 48*(1), 1-8.
- Imhof, M., Vollmeyer, R., & Beierlein, C. (2007). Computer use and the gender gap: The issue of access, use, motivation, and performance. *Computers in Human Behaviour, 23*(6), 2823-2837.
- Iniesta-Bonillo, M. A., Sánchez-Fernández, R., & Schlesinger, W. (2013). Investigating factors that influence on ICT usage in higher education: a descriptive analysis. *International Review on Public and Nonprofit Marketing, 10*(2), 163-174.
- Inman, E., Kerwin, M. & Mayes, L. (1999). Instructor and Student Attitudes toward Distance Learning. *Community College Journal of Research and Practice, 23*(6), 581-591.
- Intaganok, P., Waterworth, P. G., Andsavachulamanee, T., Grasaresom, G., & Homkome, U. (2008). Attitudes of staff to Information and Communication Technologies in a

- provincial university in Thailand. *The Electronic Journal on Information Systems in Developing Countries*, 33(3), 1-14.
- International Organization for Migration, Abuja, Nigeria (2014). Needs assessment of Nigerian education sector. Retrieved 21 October 2015 from <http://nigeria.iom.int/sites>
- Isaacs, S. (2007). Survey of ICT and education in Africa: South Africa Country Report. Retrieved 12 September 2014 from <https://www.openknowledge.worldbank>
- Ishtaiwa, F. F. (2011). Faculty attitudes and use of MOODLE course management system as a supplement to face-to-face instruction: A Jordanian Case Study. *Journal of Educational & Psychological Sciences*, 12, 12-44.
- Iskandarani, M. Z. (2008). Effect of Information and Communication Technologies (ICT) on non-industrial countries-digital divide model. *Journal of Computer Science*, 4(4), 315-319.
- Isleem, M. I. (2003). Relationships of selected factors and the level of computer use for instructional purposes by technology education teachers in Ohio public schools: a statewide survey (Doctoral dissertation). ProQuest DigitalDissertations. (UMI No. AAT 3124087).
- Ismail, I., Bokhare, S. F., Azizan, S. N., & Azman, N. (2013). Teaching via Mobile Phone: A case study on Malaysian teachers' technology acceptance and readiness. *Journal of Educators Online*, 10(1), 1- 39.
- Israel, G. D. (1992). *Determining sample size*. University of Florida Cooperative Extension Service, Institute of Food and Agriculture Sciences, EDIS. Retrieved 14 April 2014 from <http://sociology.soc.uoc.gr/socmedia/papageo/metaptyxiakoi>
- Issa, A. O., Ayodele, A. E., Abubakar, U., & Aliyu, M. B. (2011). Application of information technology to library services at the federal university of technology, Akure library, Ondo State, Nigeria. Retrieved 2 September 2015 from <http://unllib.unl.edu/LPP/issa-ayodele-abubakar-bola.pdf>
- Jackson, C. M., Chow, S., & Leitch, R. A. (1997). Toward an understanding of the behavioral intention to use an information system. *Decision Sciences*, 28(2), 357-389.
- Jacobsen, M. (1998). *Adoption patterns and characteristics of faculty who integrate computer technology for teaching and learning in higher education*. (Doctoral dissertation, University of Calgary). Retrieved 7 April 2014 from <http://people.ucalgary.ca/~dmjaco>
- Jafari, A., McGee, P., & Carmean, C. (2006). Managing courses defining learning: what faculty, students and administrators want. *Educause Review*, 41(4) 50-70.
- Jaggi, S. (2003). Descriptive Statistics and Exploratory Data Analysis. *Indian Agricultural Statistics Research Institute*, 1-18.
- Jairak, K., Praneetpolgrang, P., & Mekhabunchakij, K. (2009). An acceptance of mobile learning for higher education students in Thailand. In *Proceeding for the 6th International Conference on E-Learning from Knowledge –Based Society*, 17-18 December 2009, Thailand.

- Jebeile, S., & Reeve, R. (2003). The diffusion of e-learning innovations in an Australian secondary college: Strategies and tactics for educational leaders. *The Innovation Journal*, 8 (4). Retrieved 15 August 2014 from <http://www.innovation.cc/scholarly-style/jebeile-reeve-elearning.pdf>
- Jegade, P. O. (2009). Age and ICT-related behaviours of higher education teachers in Nigeria. *Issues in Informing Science and Information Technology*, 6, 770-777.
- Jenkins, D., Mimbs, C.A., & Kitchel, T. (2009). Computer literacy, access and use of technology in the family and consumer sciences classroom. *Journal of Family and Consumer Sciences Education*, 27(1), 1-13.
- Johnson, R. B. & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.
- Johnson, T. P., & Wislar, J. S. (2012). Response rates and nonresponse errors in surveys. *Journal of the American Medical Association*, 307(17), 1805-1806.
- Joji, S. M., Abdul-Mumin, M., & Ismail, Y. (2012). Evaluation of factors predicting academic staff acceptance of e-learning at the Centre for Distance Learning, University of Maiduguri, Nigeria. Retrieved from <http://uir.unisa.ac.za/handle/10500/8835>
- Jones, A. (2004). *Exploring the Facets of the Digital Divide in Texas Public Schools Grades K-12* (Doctoral dissertation, Texas State University).
- Joseph, L. (2008). The adoption and diffusion of computing and Internet technologies in historically Black colleges and universities. *International Journal of Applied Management and Technology*, 6(2), Retrieved 15 August 2014 from 4. <http://scholarworks>.
- Junco, R., Heiberger, G., & Loken, E. (2011). The effect of Twitter on college student engagement and grades. *Journal of Computer Assisted Learning*, 27(2), 119-132.
- Kaba, B., & Osei-Bryson, K. M. (2013). Examining influence of national culture on individuals' attitude and use of information and communication technology: Assessment of moderating effect of culture through cross countries study. *International Journal of Information Management*, 33(3), 441-452.
- Kaminer, N. (1997). Scholars and the use of the Internet. *Library and Information Science Research*, 19(4), 329-345.
- Kar, D., Saha, B., & Mondal, B. C. (2014). Attitude of university students towards e-learning in West Bengal. *American Journal of Educational Research*, 2(8), 669-673.
- Katz, M. J. (2006). *From Research to Manuscript: A guide to scientific writing*. Dordrecht, Netherlands: Springer.
- Kee, N. S., Omar, B., Mohamed, R., Ukwueze, A. C., Handayani, N. S., Amine, B. M., . . . Oluniyi, O. (2012). Towards student-centred learning: Factors contributing to the adoption of e-learn@ USM. *Malaysian Journal of Distance Education*, 14(2), 1-24.

- Keengwe, J., Kidd, T., & Kyei-Blankson, L. (2009). Faculty and technology: Implications for faculty training and technology leadership. *Journal of Science Education and Technology, 18*(1), 23-28.
- Keesee, G. S. (2010). Perceived attributes and organizational support influencing course management system adopter status in historically black colleges and universities. (Doctoral dissertation).
- Keesee, G. S., & Shepard, M. (2011). Perceived attributes predict course management system adopter status. *Online Journal of Distance Learning Administration, 14*(1). Retrieved 11 October 2014 from <http://www.westga.edu/~distance/ojdla/>
- Keller, C. (2006). Technology acceptance in academic organisations: Implementation of virtual learning environments. European conference on Information Systems (ECIS) 2006 Proceedings. Paper 50. Retrieved 15 September 2014 from <http://aisel.aisnet.org/eci>
- Keller, C. (2007). Virtual learning environments in higher education: a study of user acceptance (Dissertation Linköping University) Retrieved 20th July, 2014 from <http://www.diva-portal.org/smash/get/diva2:24073/FULLTEXT01.pdf>
- Keller, C. (2009). User acceptance of virtual learning environments: a case study from three North European universities. *Communications of the Association for Information Systems, 25*(38), 465-486.
- Kendall, J. D., Tung, L. L., Chua, K. H., Ng, C. H. D., & Tan, S. M. (2001). Receptivity of Singapore's SMEs to electronic commerce adoption. *The Journal of Strategic Information Systems, 10*(3), 223-242.
- Kenya Education Network (KENET) (2014). Mission. Retrieved 13 September 2015 from <https://www.kenet.or.ke/>
- Kerlinger, F. N. (1979). *Behavioural research: A conceptual approach*. New York: Holt, Reinhart and Winston.
- Kersaint, G. (2003). Technology beliefs and practices of mathematics education faculty. *Journal of Technology and Teacher Education, 11*(4), 549-577.
- Khalid, M. S. (2011). ICT in Education: Secondary Technical vocational education and training institute centered diffusion of innovation in rural Bangladesh. In *International Technology, Education and Development Conference* (pp. 1126-1134).
- Khechine, H., Lakhali, S., Bytha, A., & Pascot, D. (2013, March). Students' acceptance of Elluminate use in a blended learning course. Proceedings of the 7th International Technology, Education and Development Conference, Valencia. Spain.
- Kijsanayotin, B., Pannarunothai, S., & Speedie, S. M. (2009). Factors influencing health information technology adoption in Thailand's community health centers: Applying the UTAUT model. *International Journal of Medical Informatics, 78*(6), 404-416.
- King, W. R. & He, J. (2006). A meta-analysis of the Technology Acceptance Model. *Information & Management, 43*(6), 740-755.
- Kisla, T., Arikani, Y. D., & Sarsar, F. (2009). The investigation of the usage of ICT in university lecturers' courses. *Procedia-Social and Behavioral Sciences, 1*(1), 502-507.

- Knobel, M., & Lankshear, C. (2007). Online memes, affinities, and cultural production. In: M. Knobel, & C. Lankshear, (Eds.), *A New Literacies Sampler* (pp. 199-227) New York: Peter Lang,
- Knol, W. H. C., & Stroeken, J. H. M. (2001). The diffusion and adoption of information technology in small and medium-sized enterprises through IT Scenarios. *Technology Analysis and Strategic Management*, 13(2), 227-246.
- Koçak, N. G., Kaya, S., & Erol, E. (2013) Social media from the perspective of diffusion of innovation approach. *The Macrotheme Review*, 2 (3), 22-29.
- Kocaleva, M., Stojanovic, I., & Zdravev, Z. (2015). Model of e-learning acceptance and use for teaching staff in Higher Education Institutions. *International Journal of Modern Education and Computer Science (IJMECS)*, 7(4), 23-31.
- Kolawole, P. A. (2012). *Measuring factors influencing users' acceptance of Automated Teller Machine in Ibadan and Lagos Metropolis* (Unpublished Master's thesis). University of Ibadan, Ibadan.
- Krathwohl, D. R. (1993). *Methods of educational and social science research: An integrated approach*. New York: Longman
- Krejcie, R. & Morgan, D. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607-610.
- Krishnaswami, R. O., & Ranganatham, M. (2010). *Methodology of research in social sciences*. 2nd ed. Mumbai: Himalaya Publishing House.
- Kuhn, T. S. (1962). *The structure of scientific revolutions*. Chicago, IL: University of Chicago Press.
- Kuhn, T. S. (1977). *The essential tension: selected studies in scientific tradition and change*. Chicago: University of Chicago Press.
- Kuhn, T. S. (1996). *The structure of scientific revolutions*. Chicago: University of Chicago Press.
- Kukulka-Hulme, A. (2012). How should the higher education workforce adapt to advancements in technology for teaching and learning? *The Internet and Higher Education*, 15(4), 247-254.
- Kurnia, S., Mahbubur, M. R., Husada, R., & Alhashmi, S. M. (2013). Identifying facilitators and challenges for IT Adoption at a local Malaysian retail company: The IT Management Perspective. Retrieved 3 August 2014 from <http://aisel.aisnet.org/cgi/>
- Kwache, P. Z. (2007). The imperatives of ICT for teachers in Nigeria higher education. *MERLOT Journal of Online Learning and Teaching*, 3(4), 395-399.
- Kwafoa, P. N. Y., Osman, I., & Afful-Arthur, P. (2014). Assessment of the use of electronic resources among administrators and faculty in the University of Cape Coast. *Library Philosophy and Practice*, 0_1.
- LaFollette, M. C. (1994a). The politics of research misconduct: Congregational oversight, universities and science. *Journal of Higher Education*, 6(5), 261-285.

- LaFollette, M. C. (1994b). Research misconduct. *Society*, 31(3), 6-10.
- Lambooy, C. L., & Bucker, A. J. (2003). An investigation of faculty technology skills in a Puerto Rican university. *Quarterly Review of Distance Education*, 4, 143-152.
- Landau, S., & Everitt, B. (2004). *A handbook of statistical analyses using SPSS* (Vol. 1). Boca Raton, FL: Chapman.
- Lankshear, C., & Knobel, M. (2003). New literacies: Changing knowledge and classroom practice. *Journal of E-Literacy*, 1, 61-65.
- Laronde, G. J. A. (2010). *A study of information and communication technology integration by faculty teaching in a Ubiquitous laptop bachelor of education program* (Doctoral dissertation, University of Toronto).
- Lather, P. (2006). Paradigm proliferation as a good thing to think with: teaching research in education as a wild profusion. *International Journal of Qualitative Studies in Education*, 19(1), 35-57.
- Lau B. T. & Sim C. H. (2008). Exploring the extent of ICT adoption among secondary school teachers in Malaysia. *International Journal of Computing and IT Research*, 2(2), 19-36.
- Laumer, S., Eckhardt, A., & Trunk, N. (2010). Do as your parents say? -Analyzing IT adoption influencing factors for full and under age applicants. *Information Systems Frontiers*, 12(2), 169-183.
- Lee, A. Y. L & So, C. Y. K. (2014). Media Literacy and Information Literacy: Similarities and differences. *Communiar*, 42(21) 137-145.
- Lee, J. K. (1998). *Faculty utilization, attitudes, and perceptions regarding computer technology at Mississippi State University*. Dissertation Abstracts International, 59(08), 2799A. (Thesis No. 9903508).
- Lee, Y. H. (2007). *Exploring key factors that affect consumers to adopt e-reading services* (Unpublished Master Thesis). Huaan University, New Taipei.
- Lee, Y., Kozar, K. A. & Larsen, K. R. T. (2003). The technology acceptance model: past, present, and future. *Communications of the Association for Information Systems*, 12(50), 752-780.
- Leeder, C & Lonn, S. (2013). Faculty usage of library tools in a learning management system. *College & Research Libraries*. Retrieved 26 August 2015 from <http://crl.acrl.org/content/early/2013/05/13/crl13-459.full.pdf>
- Leedy, P. & Ormrod, J. (2001). *Practical research: planning and design* (7th ed.). Thousand Oaks: Sage.
- Leedy, P. D., & Ormrod, J. E. (2005). *Practical research: planning and design* (8th ed.). New York: Prentice Hall.

- Legris, P., Ingham, J., & Colletette, P. (2003). Why people use information technology? A critical review of technology acceptance model. *Information & Management*, 40, 191-204.
- Leornard, A. (2015). Academic libraries in support of e learning: the case of University of Namibia. In H. Mandi, N.H. Lukileni & R. Niskala (Eds.), *Strong libraries, strong societies: the role of libraries in socio-economic development*. Proceedings of the Namibia Library Symposium, Windock, Namibia (pp 237 -246). Namibia, University of Namibia Library.
- Less, K. H. (2003). *Faculty adoption of computer technology for instruction in the North Carolina Community College System* (Doctoral dissertation, East Tennessee State University). Retrieved 7 April 2014 from <http://dc.etsu.edu/etd/782>
- Letourneau, N. & Allen, M. (1999). Post-positivistic critical multiplism: A beginning dialogue. *Journal of Advanced Nursing*, 30(3), 623-630.
- Lewis, C. C., Fretwell, C. E., Ryan, J., & Parham, J. B. (2013). Faculty use of established and emerging technologies in higher education: A Unified Theory of Acceptance and Use of Technology perspective. *International Journal of Higher Education*, 2(2), 22-34.
- Li, N. & Kirkup, G. (2007). Gender and cultural differences in Internet use: A study of China and the UK. *Computers & Education*, 48, 301-317.
- Liang, H., Saraf, N., Hu, Q., & Xue, Y. (2007). Assimilation of enterprise systems: The effect of institutional pressures and the mediating role of top management. *MIS Quarterly*, 31, 59-87.
- Liao, H. L., & Lu, H. P. (2008). The role of experience and innovation characteristics in the adoption and continued use of e-learning websites. *Computers & Education*, 51(4), 1405-1416.
- Lin, C. Y., Huang, C. K., & Chen, C. H. (2014). Barriers to the adoption of ICT in teaching Chinese as a foreign language in US universities. *ReCALL*, 26(01), 100-116.
- Lin, H. F. (2006). Interorganizational and organizational determinants of planning effectiveness for Internet-based interorganizational systems. *Information & Management*, 43(4), 423-433.
- Lin, J., Chan, H., & Jin, Y (2004). Instant messaging acceptance and use among college students, The 7th Pacific Asia Conference on Information Systems, 181-194. Cairns, Australia
- Lin, K. (2011). E-learning continuance intention: Moderating effects of user e-learning experience. *Computer & Education*. 56(2), 515-526.
- Livingstone, S. (2008). Engaging with media: A matter of literacy? *Communication, Culture and Critique* LoBiondo-Wood, 1(1), 51-62.
- LoBiondo-Wood, G., & Haber, J. (2010). *Nursing research: Methods, critical appraisal for evidence based practice*. St. Louis: Mosby.

- Lorenzo T. (2010). Leadership and adoption of instructional technology in a military medical learning environment: A case Study. *Journal of American Society For Information Science*, 48(6), 508-518.
- Louho, R., Kallioja, M., & Oittinen, P. (2006). Factors affecting the use of hybrid media applications. *Graphic Arts in Finland*, 35(3), 11-21.
- Luan, W. S., Aziz, S. A., Yunus, A. S. M., Sidek, Z., Bakar, K. A., Meseran, H., & Atan, H. (2005). Gender differences in ICT competencies among academicians at universiti Putra Malaysia. *Malaysian Online Journal of Instructional Technology*, 2(3), 62-69.
- Luan, W. S., & Teo, T. (2009). Investigating the technology acceptance among student teachers in Malaysia: An application of the technology acceptance model (TAM). *Asia-Pacific Education Researcher*, 18(2), 261-272.
- Mac Callum, K., Jeffrey, L. & Kinshuk (2014a). Factors impacting teachers' adoption of mobile learning. *Journal of Information Technology Education: Research*, 13, 141-162.
- Mac Callum, K., Jeffrey, L. & Kinshuk (2014b). Comparing the role of ICT literacy and anxiety in the adoption of mobile learning. *Computers in Human Behaviour*, 39, 8-19.
- Mac Callum, K., & Jeffrey, L. (2013). The influence of students' ICT skills and their adoption of mobile learning. *Australasian Journal of Educational Technology*, 29(3), 303-314.
- Macharia, A. W. (2011). *Towards adoption of electronic learning: An empirical investigation of faculty behavioural intentions*. (Doctoral dissertation, Capella University). Retrieved 3 August 2015 from Proquest Dissertations and Theses Database. (Thesis No 3489768).
- Macharia, J. K., & Pelsler, T. G. (2014). Key factors that influence the diffusion and infusion of information and communication technologies in Kenyan higher education. *Studies in Higher Education*, 39(4), 695-709.
- Macharia, J., & Nyakwende, E. (2010). Vice-Chancellors influence on academic staff intentions to use Learning Management Systems (LMS) For Teaching and Learning. *Journal of Language, Technology & Entrepreneurship in Africa*, 2(1), 220-230.
- Machi, L. A., & McEvoy, B. T. (2009). *The literature review: Six steps to success*. Thousand Oaks, CA: Corwin.
- Mackenzie, N. & Knipe, S. (2006). Research dilemmas: Paradigms, methods and methodology. *Issues in Educational Research*, 16(2), 193-205.
- MacNaughton, G., Rolfe S. A. & Siraj-Blatchford, I. (2001). *Doing early childhood research: international perspectives on theory and practice*. Australia: Allen & Unwin.
- Maduku, D. K (2015). Understanding behavioural intention towards e-books use: Does gender really matter? *Proceedings of 31st International Business Research Conference 27-29 July 2015, Ryerson University, Toronto, Canada 1-15*.

- Maharana, B., & Mishra, C. (2007, August). A survey of digital information literacy of faculty at Sambalpur University. Retrieved 25 September 2014 from <http://digitalcommons.unl>.
- Maina, M. K., & Nzuki, D. M. (2015). Adoption Determinants of e-learning management system in institutions of higher learning in Kenya: a case of selected universities in Nairobi metropolitan. *International Journal of Business and Social Science*, 6(2), 233-248.
- Maithya, R. & Ndebu, S. (2011, July 22nd). Factors influencing effective use of ICT in teacher education: A Case of Kenya Technical Teachers College. Quality Education for Societal Transformation. International Conference on Education, Kenyatta University Conference Centre. Nairobi. Kenyatta University and Syracuse University.
- Makgato, M. (2012). Status of teachers' use of educational technology: a case of some schools in South African semi-urban locations. *International Proceedings of Economics Development and Research-Business and Economics Research*, 47. Retrieved 5 April 2015 from <http://ipedr.com/vol47/023-ICERI2012-S10014.pdf>
- Manda, P. A. (2002). State of the review of research methodology in African librarianship. *University of Dar es Salaam Library Journal* 3(1), 90-103.
- Mandal, D., & McQueen, R. (2012). Extending UTAUT to explain social media adoption by microbusinesses. *International Journal of Managing Information Technology*, 4(4), 112-127.
- Mangesi, K. (2007). Survey of ICT in education in Ghana. Country reports. Survey of ICT and education in Africa (Vol.2, p. 53). Washington, DC: infoDev/World Bank.
- Marchewka, J., Liu, C., & Kostiwa, K. (2007). An application of the UTAUT model for understanding student perceptions using course management software. *Communications of the IIMA*, 7(2), 93-104.
- Maree, K. (2010). *First steps in research*. Pretoria: Van Schaik.
- Markauskaite, L. (2007). Exploring the structure of trainee teachers' ICT literacy: The main components of and relationships between, general cognitive and technical capabilities. *Education Technology Re-search Development*, 55(6), 547-572.
- Martens, Hans. (2010). Evaluating media literacy education: Concepts, theories and future directions. *Journal of Media Literacy Education*, 2(1), 1-22.
- Martin, F., Parker, M., & Allred, B. (2013). A case study on the adoption and use of synchronous virtual classrooms. *The Electronic Journal of E-Learning*, 11(2), 124-138.
- Martins, C. B., Steil, A. V., & Todesco, J. L. (2004). Factors influencing the adoption of the Internet as a teaching tool at foreign language schools. *Computers & Education*, 42(4), 353-374.
- Martins, E. C., & Terblanche, F. (2003). Building organisational culture that stimulates creativity and innovation. *European Journal of Innovation Management*, 6, 64-74.

- Martins, L. L., & Kellermanns, F. W. (2004). A model of business school students' acceptance of a webbased course management system. *Academy of Management Learning and Education*, 3(1), 7-26.
- Marzilli, C., Delello, J., Marmion, S., McWhorter, R., Roberts, P., & Marzilli, T. S. (2014). Faculty attitudes towards integrating technology and innovation. Retrieved 17 August 2015 from <http://arxiv.org/ftp/arxiv/papers/1404/1404.4334.pdf>
- Masiello, I., Ramberg, R., & Lonka, K. (2005). Attitudes to the application of a Web-based learning system in a microbiology course. *Computers and Education*, 45(2), 71-185.
- Mathipa, E. R., & Mukhari, S. (2014). Teacher Factors Influencing the Use of Ict in Teaching and Learning in South African Urban Schools. *Mediterranean Journal of Social Sciences*, 5(23), 1213-1220.
- Mazer, J. P., Murphy, R. E., & Simonds, C. S. (2007). I'll see you on "Facebook": The effects of computer-mediated teacher self-disclosure on student motivation, affective learning, and classroom climate. *Communication Education*, 56(1), 1-17.
- Mbatha, B.T., Ocholla, D.N. & Le Roux, J. (2011). Some implications of information and communication technologies on public service work environments in South Africa. *Information Development*, 27(4), 47-62.
- Mbengo, P. (2014). E-learning adoption by lecturers in selected Zimbabwe state universities: An application of Technology Acceptance Model. *Journal of Business Administration and Education*, 6(1), 15- 33.
- McKenzie, B. K., Mims, N., Bennett, E., and Waugh, M.W. (2000). Needs, concerns and practices of online instructors. *Online Journal of Distance Learning Administration*, 3(3), 1-9.
- McKenzie, J. (2001). Head of the class: How teachers learn technology best. *American School Board Journal*, 188(1), 20-23.
- McMillan, J. H. & Schumacher, S. (2001). Research in education: a conceptual introduction, 5th ed. (New York: Addison Wesley Longman Inc. In K. Maree (Ed.). 2007. First steps in research. Pretoria: Van Schaik Publishers.
- McQuiggan, C. A. (2006). A survey of university faculty innovation concerns and perceptions that influence the adoption and diffusion of a course management system. Retrieved from 11 October 2015 from <http://www.eric.ed.gov/PDFS/ED492812.pdf>
- Medlin, B.D. (2001). *The factors that may influence a faculty member's decision to adopt electronic technologies in instruction*. (Doctoral dissertation, Virginia Polytechnic Institute and State University). Retrieved 7 April 2014 from *Proquest Digital Dissertations and Theses database*. (Thesis No. 3095210).
- Mertens, D. M. (2010). *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods* (3rd ed.). Thousand Oaks: Sage.
- Mertens, D.M. (2005). *Research methods in education and psychology: Integrating diversity with quantitative and qualitative approaches* (2nd ed.). Thousand Oaks: Sage.

- Mingaine, L. (2013). Skill challenges in adoption and Use of ICT in public Secondary Schools, Kenya. *International Journal of Humanities and Social Science*, 3(13), 61-72.
- Mingers, J. (2001). Combining IS research methods: Towards a pluralist methodology. *Information Systems Research*, 12(3), 240-259.
- Minton, H. L., Schneider, F. W., & Wrightsman, L. S. (1980). *Differential psychology*, Brooks: Cole Publishing Company
- Mlitwa, N. (2007). E-Learning and learning management systems (LMS) in a changing higher education environment. *Proceedings: Transforming IS & CS Education and Research in a Changing Higher Education Environment*. Cape Town.
- Mock, K. (2004). Teaching with Tablet PC's. *Journal of Computing Sciences in Colleges*, 20(2), 17-27
- Mohamad Hsbollah, H., Kamil, & Idris, M. (2009). E-learning adoption: the role of relative advantages, trialability and academic specialisation. *Campus-Wide Information Systems*, 26(1), 54-70.
- Mohamed Samir Hussein, R., & Mourad, M. (2014). The adoption of technological innovations in a B2B context: an empirical study on the higher education industry in Egypt. *Journal of Business & Industrial Marketing*, 29(6), 525-545.
- Mohammad, J. (2007). Assessment of the teaching members' opinions at Hashemite university on the usage of the Internet in academic research. *Damascus University Journal*, 23(1), 273-308.
- Mokhtar, S. A., Ali, S. H. S., Al-Sharafi, A., & Aborujilah, A. (2013, January). Cloud computing in academic institutions. In *Proceedings of the 7th international Conference on Ubiquitous information Management and Communication* (p. 2). ACM.
- Moon, J. W., & Kim, Y. G. (2001). Extending the TAM for a world-wide-web context. *Information & Management* 38(4), 217-230.
- Moore G.C. & Benbasat I. (1991). Development of an instrument to measure the perception of adopting an information technology innovation. *Information System Research*, 2(3), 192-222.
- Morgan, S., Heeks, R. & Arun, S. (2004). Researching ICT-based enterprise for women in developing countries: A gender perspective women's ICT-based enterprise for development project. Retrieved 25 August 2015 from <http://www.womenictenterprise>
- Morris, M. G. & Venkatesh, V. (2000). Age differences in technology adoption decisions: Implications for a changing workforce. *Personnel Psychology*, 53(2), 375-403.
- Moses, J. W. & Knutsen, T. L. (2012). *Ways of knowing* (2nd ed). New York: Palgrave Macmillan
- Moses, P., Khambari, M., Nida, M., & Wong, S. L. (2008). Laptop use and its antecedents among educators: a review of the literature. *European Journal of Social Sciences*, 7(1), 104-114.

- Mourad, N. J. (2012). Perceived factors influencing acceptance and adoption of mobile technology by clinicians in practice (Unpublished Master's thesis). University of Minnesota. Retrieved 24 August 2015 from <https://www.academia.edu/4265212/>
- Mouton J (1996). *Understanding social research*. Pretoria: JL van Schaik Publishers.
- Mtebe, J. S. (2014). Acceptance and use of e-learning technologies in higher education in East Africa. (Doctoral thesis, University of Tampere). Retrieved 6 August 2015 from <http://tampub.uta.fi/bitstream/handle/10024/96170/978-951-44-9628-8.pdf>
- Mtebe, J. S. (2013). Exploring the potential of clouds to facilitate the adoption of blended learning in Tanzania. *International Journal of Education and Research*, 1(8), 1-16.
- Mtebe, J. S., & Raisamo, R. (2014). Challenges and instructors' intention to adopt and use open educational resources in higher education in Tanzania. *The International Review of Research in Open and Distance Learning* 15(1). Retrieved 14 October, 2014 from <http://www.irrodl.org/index.php/irrodl/article/view/1687/2771>
- Muhametjanova, G. (2014). *Barriers and enablers of technology integration into instruction in the Kyrgyzstan-Turkey Manas University* (Unpublished PhD thesis). Middle East Technical University.
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*. London: Thousand Oaks, CA:Sage.
- Muinde, F. N. (2009). *Investigation of factors affecting the adoption of Information and Communication Technologies for communication of research output in research institution in Kenya*. (Unpublished PhD thesis). Victoria University of Wellington, New Zealand.
- Mumtaz, S. (2000). Factors affecting teachers' use of information and communications technology: A review of the literature. *Journal of Information Technology for Teacher Education*, 9(3), 319-341.
- Mushi, R. T. (2010). *Use of Information and Communication Technologies (ICTs) by postgraduate students and academic staff for teaching and learning at the University of KwaZulu-Natal*. (Unpublished Master's thesis). University of KwaZulu-Natal, Pietermaritzburg.
- Mutingi, M., & Matope, S. (2013, February). Dynamics of information technology adoption in a complex environment. In *Industrial Technology (ICIT), 2013 IEEE International Conference on* (pp. 1466-1471). IEEE.
- Mutula, S. M. (2001). The IT environment in Kenya: Implications for libraries in public universities. *Library Hi Tech*, 19(2), 155-166.
- Mutula, S. M. (2005). Peculiarities of the digital divide in sub-Saharan Africa. *Program*, 39(2), 122-138.
- Mwalongo, A. (2012). Teachers' perceptions about ICTs for teaching, professional development, administration and personal use. *International Journal of Education and Development using ICT*, 7(3), 36-49.

- Myers, M. D. (1997). Qualitative research in information systems, *MIS Quarterly*, 21(2), 241-242.
- Myers, M. D., & Tan, F. B. (2003). Beyond models of national culture in information systems research. *Advanced Topics in Global Information Management*, 2, 14-29.
- Myers, M. D., & Tan, F. B. (2002). Beyond models of national culture in information systems research. *Journal of Global Information Management* 10(1), 24-32.
- Nagy, J. T. (2014). Using learning management systems in business and economics studies in Hungarian higher education. *Education and Information Technologies*, 1-21.
- Nair, I., & Das, V. M. (2011). Analysis of recent studies undertaken for assessing acceptance of technology among teachers using TAM. *International Journal of Computer Applications*, 32(8), 38-46.
- Namukangula, J. K. (2007). *Relationship between desk top characteristics and adaptation to ICT in learning in selected universities in Uganda*. (Unpublished Masters thesis). Makerere University, Kampala, Uganda.
- Nanayakkara, C. (2007). A model of user acceptance of Learning Management Systems: a study within tertiary institutions in New Zealand. *The International Journal of Learning*, 13(12), 223-232.
- Nantz, K. S., & Lundgren, T. D. (1998). Lecturing with technology. *College Teaching*, 46(2), 53-56.
- National Universities Commission (NUC) Bulletin (2014). List of Nigerian universities. Retrieved 11 September 2014 from <http://www.nuc.edu.ng>
- Nazari, F. (2014). Attributes of diffusion theory as effective predictors on university faculty members' adoption of online database in Iran. *Swiss Journal of Research in Business and Social Sciences*, 1(1), 38-48.
- Ndubisi, N. O., & Jantan, M. (2003). Evaluating IS usage in Malaysian small and medium-sized firms using the technology acceptance model. *Logistics Information Management*, 16 (6), 440-450.
- Ndubisi, N.O., & Kahraman, C. (2005). Malaysian women entrepreneurs: Understanding the ICT usage behaviors and drivers, *Journal of Enterprise Information Management*, 18 (6), 721-739.
- Neo, M., & Neo, T. K. (2000). Multimedia Learning: Using multimedia as a platform for instruction and learning in higher education. In *Multimedia University International Symposium on Information and Communication Technologies 2000 (M2USIC'2000)* (pp. 5-6).
- Neuman, W. L. (2006). *Social research methods: qualitative and quantitative approaches* (6th ed.). Boston: Pearson Education Inc.
- Neuman, W. L. (2000). *Social research methods: qualitative and quantitative approaches* (4th ed.). Boston: Allyn & Bacon.

- Neuman, W. L. (2011). *Social research methods: qualitative and quantitative approaches* (7th ed.). Boston: Pearson.
- New Media Consortium. (2011). The 2011 Horizon Report. Retrieved 10 April 2014 from <http://www.nmc.org/pdf/2011-HorizonReport.pdf>
- Newton, R. (2003). Staff attitudes to the development and delivery of e-learning. *New Library World*, 104(10), 412-425.
- Nfila, R. B. (2007). Academic libraries support for e-learning: initiatives and opportunities-the case of University of Botswana Library. Retrieved 10 April 2014 from http://www.library.up.ac.za/digi/docs/nfila_paper.pdf
- Ng, K. H., & Komiya, R. (2000). Introduction of intelligent interface to virtual learning environment. In *Multimedia University International Symposium on Information and Communication Technologies 2000 (M2USIC'2000)* (pp. 5-6).
- Ngai, E. T., Poon, J. L., & Chan, Y. C. (2007). Empirical examination of the adoption of WebCT using TAM. *Computers & Education*, 48(2), 250-267.
- Nicolle, P. S., & Lou, Y. (2008). Technology adoption into teaching and learning by mainstream university faculty: A mixed methodology study revealing the “how, when, why, and why not”. *Journal of Educational Computing Research*, 39(3), 235-265.
- Nigeria Census Figures (2006). Nigeria Census Figures Retrieved from <http://www.nigeriamasterweb.com/Nigeria06CensusFigs.html>
- Nihuka, K. A., & Voogt, J. (2012). Collaborative e-learning course design: Impacts on instructors in the Open University of Tanzania. *Australasian Journal of Educational Technology*, 28(2), 232-248.
- Nkonki, V., Ntlabathi, S., & Mkonqo, L. (2013, June). Explaining Influences in the Adoption of Blackboard at an Institution of Higher Learning. In *International Conference on e-Learning* (p. 301). Academic Conferences International Limited.
- Nolen, A. L., & Putten, J. (2007). Action research in education: Addressing gaps in ethical principles and practices. *Educational Researcher*, 36(7), 401-407.
- Norris, P. (2001). *Digital divide: Civic engagement information poverty, and the Internet Worldwide*. Cambridge, New York: Cambridge University Press.
- Ntemana, T. J., & Olatokun, W. (2012). Analyzing the influence of diffusion of innovation attributes on lecturers' attitudes toward information and communication technologies. *Human Technology*, 8(2), 179-197.
- Nunan, D., & Wong, L. (2005). Innovation and change: Information technology and inservice teacher education. In C. Davison (Ed.), *Information technology and innovation in language education* (pp. 195- 227). Hong Kong, China: Hong Kong University Press.
- Nwagwu, W., & Agarin, O. (2008). Nigerian University websites: A webometric analysis. *Webology*, 5(4), Article 62. Retrieved 26 April 2014 from: <http://www.webology.org/2008/v5n4/a62.html>

- Nwosu, O., & Ogbomo, E. F. (2011). ICT in Education: A catalyst for effective use of information. *Pacific Northwest Library Association Quarterly*, 75(4), 38-49.
- Nyagowa, H. O., Ocholla, D. N., and Mutula, S. M. (2013). The influence of infrastructure, training, content and communication on the success of NEPAD (New Partnership for Africa's Development) pilot e-schools in Kenya. *Information Development*, 30(3), 235-246.
- Nyirongo, N. K. (2009). *Technology adoption and integration: A descriptive study of a higher education institution in a developing nation*. Dissertation submitted to Virginia Polytechnic Institute and State University Retrieved 30 September 2014 from <https://vtechworks.lib.vt.edu/handle/10919/26827>
- O'Mahony, S. & Barley, S.R. (1999). Do digital telecommunications affect work and organization?: The state of our knowledge. *Research in Organizational Behaviour*, 21(1), 25-61.
- Obi, E. (2012). Helping to bring African universities online. Google Africa Blog. Retrieved 18 September 2015 from <http://google-africa.blogspot.com/2012/09/helping-to-bring-african-universities.html>
- Obiri-Yeboah, K., Kwarteng, K. O., & Kyere-Djan, R. (2013). Factors affecting ICT adoption in tertiary institutions in Ghana: A case of Kwame Nkrumah University of Science and Technology. *Information and Knowledge Management*, 3(6), 13-21.
- Ocholla D.N (1996). Information-seeking behaviour by academics: A preliminary study. *International Information Librarianship Review*, 28(4), 345-358.
- Odabasi, H. F. (2000). Faculty use of technological resources in Turkey. *Innovations in Education and Training International*, 37(2), 103-107.
- Odero-Musakali, D., & Mutula, S. M. (2007). Internet adoption and assimilation in Kenyan university libraries. *Library review*, 56(6), 464-475.
- Ogunsola, L. A., & Okusaga, T. O. (2006). Digital divide between developed and less-developed countries: the way forward. *Journal of Social Science*, 13(2), 137-146.
- Okazaki, S., & dos Santos, L. M. R. (2012). Understanding e-learning adoption in Brazil: Major determinants and gender effects. *The International Review of Research in Open and Distributed Learning*, 13(4), 91-106.
- Olasina, G. (2014). *Predictors of legislators' ICT acceptance and use in the performance of legislative functions at the Nigerian National Assembly* (Unpublished PhD thesis). University of KwaZulu-Natal, Pietermaritzburg.
- Olatokun, W. M. (2007). Availability, accessibility and use of ICTs among Nigerian women academics. *Malaysian Journal of Library & Information Science*, 12(2), 13-33.
- Olatokun, W.M. & Opesade, O.A. (2008). An e-readiness assessment of Nigeria's Premier University (Part 1). *International Journal of Education and Development using Information and Communication Technology*, 4(2), 16-46.
- O'Leary, Z. (2004). *The essential guide to doing research*. London: Sage.

- Oloyede H. O. B. & Adekola, B. (2010). Prospects and challenges of private universities. Fifty years of university education in Nigeria: Evolution, achievement and future direction. *National Universities Commission, Nigeria*, pp. 177-185.
- Olsen, M. E, Lodwick, D.G & Dunlop, R.E (1992). *Viewing the world ecologically*. Boulder, CO: Westview
- Olson urt deMaagd, J., Tarkleson, E., Sinclair, J., Yook, S., & Egidio, R. (2011). An analysis of e-learning impacts & best practices in developing countries. Retrieved 15 September 2014 from http://cas.msu.edu/wp-content/uploads/2013/09/E-Learning-White-Paper_oct-2011.pdf
- Ong, C. S. & Lai, J. Y. (2006) Gender differences in perceptions and relationships among dominants of e-learning acceptance. *Computers in Human Behaviour*, 22, 816-829.
- Onasanya, S. A., Shehu, R. A., Oduwaiye, R. O. & Shehu, L. A. (2010). Higher Institutions Academics' Attitude Towards Integration of ICT into Teaching and Research in Nigeria. *Research Journal of Information Technology*, 2, 1-10.
- Onwuagboke, B. B. C., Singh, T. K. R., & Onwuagboke, J. N. (2014). Availability, gender and teaching experience: Determinants of ICT utilization in teaching in rural secondary schools in south eastern Nigeria. *The International Journal of Science and Technoledge*, 2(5), 410-416
- Onwuegbuzie, A. J., Collins, K. M. T., Leech, N. L., Dellinger, A. B., & Jiao, Q. G. (2010). A meta-framework for conducting mixed research syntheses for stress and coping researchers and beyond. *GS Gates, WH Gmelch, & M. Wolverton (Series Eds.) & KMT Collins, A J.*
- Onyango, R. A. (2002). *Data Collection Instruments in Information Sciences Research*. In: Information Science, an African Perspective. Aina, L.O. (Ed.). Ibadan: Stirling Horden Publishers.
- OECD (2008) Understanding the Digital Divide (Information and Communication Technologies). Paris: Organisation for Economic Co-operation and Development.
- Organisation for Economic Co-operation and Development (OECD), (2001). Understanding the digital divide. Retrieved January 4 2015 from <http://www.oecd.org/dataoecd/38/57/1888451>
- Orlikowski, W. & Baroudi, J. (1991). Studying information technology in organisations: Research approaches and assumptions. *Information Systems Research*, 2(1), 1-28.
- Oshinaike, A. B., & Adekunmisi, S. R. (2012). Use of multimedia for teaching in Nigerian university system: A case study of university of Ibadan. Retrieved 12 June 2014 from http://www.webpages.uidaho.edu/*mbolin/oshinaike-adekunmisi.htm
- Oshlyansky, L., Cairns, P., & Thimbleby, H. (2007) . Validating the Unified Theory of Acceptance and Use of Technology (UTAUT) tool cross-culturally. *BCS HCI*, (2), 11-15.

- Osika, E., Johnson, R., & Buteau, R. (2009). Factors influencing faculty use of technology in online instruction: A case study. *Online Journal of Distance Learning Administration*, 12(1). Retrieved 4 August 2014 from <http://www.westga.edu/~distance/ojdla/spring>
- Owusu-Ansah, S. (2013). Application of Information and Communication Technology (ICT): a comparative analysis of male and female academics in Africa. *Library Philosophy and Practice*. Retrieved 25 August 2014 from <http://digitalcommons.unl.edu/>
- Oye, N. D., Iahad, N. A., & Rahim, N. A. (2014). The history of UTAUT model and its impact on ICT acceptance and usage by academicians. *Education and Information Technologies*, 19(1), 251-270.
- Oye N. D., Iahad, N. A., & Ab.Rahim N. (2012a). Behavioural Intention to accept and use ICT in public university: integrating quantitative and qualitative data. *Journal of Emerging Trends in Computing and Information Sciences*, 3(6), 957 -969.
- Oye, N. D., Iahad, N.A. & Ab. Rahim, N. (2012b). A proposed guideline for ICT acceptance and usage for universities in developing countries. *International Journal of Computer Science and Information Technology & Security (IJCSITS)*, 2(1), 30-39.
- Oye, N. D., Iahad, N., & Ab. Rahim, N. (2012c). The impact of UTAUT model and ICT theoretical framework on university academic staff: Focus on Adamawa State University, Nigeria. *International Journal of Computers & Technology*, 2(2), 102 -111.
- Oye, N., Iahad, N., & Ab. Rahim, N. A., (2012d). The history of UTAUT model and its impact on ICT acceptance and usage by academicians. *Education and Information Technologies*, 1-20.
- Oye, N. D., Iahad, A. N., and Ab.Rahim, N. A. (2012e). Acceptance and usage of ICT by university academicians using UTAUT Model: A case study of university of Port Harcourt, Nigeria. *Journal of Emerging Trends in Computing and Information Sciences*, 3(1), 81-89.
- Oye, N. D., Salleh, M., & Iahad, N. A. (2011). Challenges of e-learning in Nigerian university education based on the experience of developing countries. *International Journal of Managing Information Technology*, 3(2), 39-48.
- Oye, N., & Iahad, N. A. (2009). Adoption and acceptance of ICT innovations in Nigerian public universities. *International Journal of Computer Science and Engineering Technology*, 1(7), 434-443.
- Oye, N. D., Iahad, N. A., & Rabin, Z. A. (2011). A model of ICT acceptance and use for teachers in higher education institutions. *International Journal of Computer Science & Communication Networks*, 1(1), 21-40.
- Oye, N. D., Iahad, N. Ab. Rahim, A., & Zairah, N. (2012). A comparative study of acceptance and use of ICT among university academic staff of ADSU and LASU: Nigeria. *International Journal of Science and Technology*, 1(1), 40-52.
- Oyelaran-Oyeyinka, B., & Adeya, C. N. (2004). Dynamics of adoption and usage of ICTs in African universities: A study of Kenya and Nigeria. *Technovation*, 24(10), 841-851.

- Oyelaran-Oyeyinka, B; & Lai, K. (2006). *SMEs and new technologies, learning, e-business and development*. London: Palgrave Publishers.
- Oyelaran-Oyeyinka, B., & Lal, K. (2005). Internet diffusion in sub-Saharan Africa: A cross country analysis. *Telecommunications policy*, 29(7), 507-527.
- Papaioannou, P. & Charalambous, K. (2011). Principals' attitudes toward ict and their perceptions about the factors that facilitate or inhibit ICT integration in primary schools of Cyprus. *Journal of Information Technology Education*, 10, 333-347.
- Parayitam, S., Desai, K. J., Desai, M. S., & Eason, M. K. (2010) Computer attitude as a moderator in the relationship between computer anxiety, satisfaction, and stress. *Computers in Human Behaviour*, 26(3), 345-352.
- Pardamean, B., & Susanto, M. (2012). Assessing User Acceptance toward Blog Technology Using the UTAUT Model. *International Journal of Mathematics and Computers in Simulation*, 1(6), 203 -212.
- Parisot, A.H. (1995). *Technology and teaching: The adoption and diffusion of technological innovations by a community college faculty* (Doctoral dissertation, Montana State University, 1995). Proquest Digital Dissertations and Theses database. (Thesis No. 9542260).
- Park, J., Yang, S., & Lehto, X. (2007). Adoption of mobile technologies for Chinese consumers. *Journal of Electronic Commerce Research*, 8(3), 196-206.
- Park, S. Y. (2009). An analysis of the Technology Acceptance Model in understanding university students' behavioural intention to use e-Learning. *Educational Technology & Society*, 12 (3), 150–162.
- Park, B. (2003). *Faculty adoption and utilization of Web-assisted instruction (WAI) in higher education: Structural equation modeling (SEM)*. Unpublished Ph.D. dissertation, The Florida State University, Tallahassee, Florida.
- Parthasarathy, M., & Bhattacharjee, A. (1998). Understanding post-adoption behaviour in the context of online services. *Information Systems Research*, 9(4), 362-379.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage.
- Patton, M. Q. (1990). *Qualitative Evaluation and Research Methods* (2nd ed.). Thousand Oaks, CA: Sage.
- Peansupap, V., & Walker, D. H. (2005). Factors enabling information and communication technology diffusion and actual implementation in construction organisations. *Electronic Journal of Information Technology in Construction*, 10(14), 193-218.
- Pedhazur, E. J., & Schmelkin, L. P. (1991). *Measurement, design, and analysis: An integrated approach*. Hillsdale, NJ: Lawrence Erlbaum Associates Publications.

- Peeraer, J. and Van Petegem, P. (2010). Factors Influencing Integration of ICT in Higher Education in Vietnam. In Z. Abas et al. Eds. AACE. *Proceedings of Global Learn Asia Pacific*, (pp. 916-924).
- Perkins, R. A. (2011). Using Rogers' theory of perceived attributes as a framework for understanding the challenges of adoption of open educational resources. *International Journal of Humanities and Social Science* 1(18), 59-66.
- Petit dit Dariel, O., Wharrad, H., & Windle, R. (2013). Exploring the underlying factors influencing e-learning adoption in nurse education. *Journal of Advanced Nursing*, 69(6), 1289-1300.
- Phua, P. L., Wong, S. L., & Abu, R. (2012). Factors influencing the behavioural intention to use the internet as a teaching-learning tool in home economics. *Procedia-Social and Behavioral Sciences*, 59, 180-187.
- Pianfetti, E. (2001). Focus on research: Teachers and technology: Digital literacy through professional development. *Language Arts*, 78(3), 255-262.
- Pickard, A. J. (2007). *Research methods in information*. London: Facet Publishing
- Pickett, L. L., Ginsburg, H. J., Mendez, R. V., Lim, D. E., Blankenship, K. R., Foster, L. E., ... & Sheffield, S. B. (2012). Ajzen's theory of planned behavior as it relates to eating disorders and body satisfaction. *North American Journal of Psychology*, 14(2), 339-354.
- Pinto, J., & Mantel, S, (1990). The causes of project failure. *IEEE Transactions on Engineering Management*, 37(4), 269-267.
- Plouffe, C.R., Hulland, J.S., & Vandenbosch, M. (2001). Research report: Richness versus parsimony in modeling technology adoption decisions: Understanding merchant adoption of a smart card-based payment system. *Information Systems Research*, 12(2), 208-222.
- Polit, D. F., & Beck, C. T. (2004). *Nursing research: Appraising evidence for nursing practice* (7th ed.). Philadelphia: Wolters Klower/Lippincott Williams & Wilkins.
- Polit, D. F., & Beck, C. T. (2008). *Nursing research: generating and assessing evidence for nursing practice*. Philadelphia: Lippincott
- Polit, D. F., & Beck, C. T. (2009). *Nursing research: Generating and assessing evidence for nursing practice* (8th ed.). Philadelphia: Wolters Klower/Lippincott Williams & Wilkins.
- Polit, D. F., & Beck, C. T. (2010). Generalization in quantitative and qualitative research: Myths and strategies. *International journal of nursing studies*, 47(11), 1451-1458.
- Polit, D. F., & Beck, C. T., (2012). *Nursing research: generating and assessing evidence for nursing practice* (9th ed.). Philadelphia: Wolters Kluwer

- Potosky, D. (2002). A field study of computer efficacy beliefs as an outcome of training: The role of computer playfulness, computer knowledge, and performance during training. *Computers in Human Behaviour*, 18(3), 241-255.
- Prasad, A., & Prasad, P. (2002). The coming of age of interpretive organisational research. *Organizational Research Methods*, 5(1), 4-11.
- Prensky, M. (2001). Digital natives, digital immigrants part 1. *On the horizon*, 9(5), 1-6.
- Prestridge, S. (2012). The beliefs behind the teacher that influences their ICT practices, Griffith University Brisbane Australia. *Journal of Computer Education*, 58(1), 449-458.
- Price, L. & Kirkwood, A. (2011). *Enhancing professional learning and teaching through technology: a synthesis of evidence-based practice among teachers in higher education*. York, UK: Higher Education Academy.
- Priyanka, S., & Kumar, A. (2013). Understanding the Evolution of Technology Acceptance Model. *International Journal of Advance Research in Computer Science and Management Studies*, 1(6), 144-148.
- Punch, K. F. (2009). *Introduction to research methods in education*. Los Angeles: Sage.
- Punch K. F. (2005). *Introduction to social research: quantitative and qualitative approaches*. London: Sage.
- Punnoose, A. (2012). Determinants of intention to use e-learning based on the Technology Acceptance Model. *Journal of Information Technology Education: Research*, 11(1), 301-337.
- Pynoo, B., & van Braak, J. (2014). Predicting teachers' generative and receptive use of an educational portal by intention, attitude and self-reported use. *Computers in Human Behavior*, 34, 315-322.
- Pynoo, B., Devolder, P., Tondeur, J., Braak, J., Duyck, W., & Dyck, P. (2011). Predicting secondary school teachers' acceptance and use of a digital learning environment: A cross-sectional study. *Computers in Human Behaviour*, 27(2), 568-575.
- Qi, J., Li, L., Li, Y. & Shu, H. (2009). An Extension of Technology Acceptance Model: Analysis of the adoption of mobile data services in China. *Systems Research and Behavioral Science Syst*, 26(3), 391-407.
- Quaye, F., Ametepe, W., & Annan, N. K. (2015). The impact of ICT on teaching and learning in tertiary institutions: a case study of Wisconsin International University College, Ghana. *Journal of Information Engineering and Applications*, 5(5), 8-14.
- Qureshi, S., & York, A. S. (2008, January). Information technology adoption by small businesses in minority and ethnic communities. In *Hawaii International Conference on System Sciences, Proceedings of the 41st Annual* (pp. 447-447). IEEE.
- Rahim, B. A., & Rashidah, S. (2013, October). Teachers' attitudes towards a learning management system, MC Online: An exploratory study in a Singapore secondary

- school. In *Educational Media (ICEM), 2013 IEEE 63rd Annual Conference International Council for* (pp. 1-18). IEEE.
- Rahimi, M., & Yadollahi, S. (2011). Computer anxiety and ICT integration in English classes among Iranian EFL teachers. *Procedia Computer Science*, 3, 203-209.
- Rajesh, M. (2003). A Study of the problems associated with ICT adaptability in developing countries in the context of distance education. *Turkish Online Journal of Distance Education*, 4(2). Retrieved 22 October 2014 from <http://tojde.anadolu.edu.tr/yonetim/>
- Ramayah, T. (2006). Interface characteristics, perceived ease of use and intention to use an online library in Malaysia. *Information Development*, 22(2), 123-133.
- Ramayah, T., Siron, R., Dahlan, N., & Mohamad, O. (2002). Technology usage among owners/managers of SME's: the role of demographic and motivational variables. *Proceedings of the 6th Annual Asian-Pacific Forum for Small Business on "Small and Medium Enterprises Linkages, Networking and Clustering*, Kuala Lumpur, Malaysia.
- Rana, N. (2013). A study to assess teacher educators' attitudes towards technology integration in classrooms. *MIER Journal of Educational Studies, Trends and Practices*, 2(2), 190-205.
- Rasimah, C., Ahmad, A., & Zaman, H. (2011). Evaluation of user acceptance of mixed reality technology. *Australasian Journal of Educational Technology*, 27(8), 1369-1387.
- Rastogi A. & Malhotra S. (2013). ICT Skills and Attitude as Determinants of ICT Pedagogy Integration. *European Academic Research*, 1(3), 316-317.
- Redmann, D., & Kotrlik, J. (2009). Family and consumer sciences teachers' adoption of technology for use in secondary classrooms. *Journal of Family & Consumer Sciences Education*, 27(1), 29-45.
- Reio, T. G. (2007). Survey non-response bias in social science research (Perspectives on research). *New Horizons in Adult Education and Human Resource Development*, 21(1/2), 48-51.
- Rellinger, B. A. (2014). The diffusion of smartphones and tablets in higher education: a comparison of faculty and student perceptions and uses (Doctoral thesis, Bowling Green State University). Retrieved 5 September 2015 from <https://etd.ohiolink.edu/!etd>
- Rhema, A. & Miliszewska, I. (2010). Towards e-learning in higher education in Libya. *Issues in Informing Science and Information Technology*, 7(1), 423-437.
- Richards, K. (2003). *Qualitative inquiry in TESOL*. Basingstoke, UK: Palgrave Macmillan.
- Ricoy, C., Feliz, T., & Couto, M. J. (2013). The digital divide among university freshmen. *Turkish Online Journal of Educational Technology-TOJET*, 12(2), 262-268.
- Robertson, M., & Al-Zahrani, A. (2012). Self-efficacy and ICT integration into initial teacher education in Saudi Arabia: Matching policy with practice. *Australasian Journal of Educational Technology*, 28(7), 1136-1151.

- Robinson, M., & Ally, M. (2009). Transition to e-Learning in a Gulf Arab Country. In the 2nd Annual Forum on e-Learning Excellence in the Middle East, Dubai, UAE.
- Robson, C. (2002) *Real World Research* (2nd ed.). Oxford: Blackwell.
- Rogers, E. M. (1962). *Diffusion of innovations*. New York: Free Press.
- Rogers, E. M. (1983). *Diffusion of innovations*. New York: Free Press.
- Rogers, E. M. (1995). *Diffusion of innovations*, (4th ed.). New York: Free Press.
- Rogers, M. E. 2003. *Diffusion of Innovations* (5th ed.). New York: Free Press.
- Rolfe, V., Alcocer, M., Bentley, E., Milne, D., & Meyer-Sahling, J. (2008). Academic staff attitudes towards electronic learning in Arts and Sciences. *Bioscience*, 3, 1-8.
- Romani, J. (2009). Strategies to Promote the Development of E-competencies in the next generation of professionals: European and International Trends, Mexico: SKOPE
- Rumanyika, J. D., & Galan, R. M. (2015). Challenges for teaching and learning information and communication technology courses in higher learning institutions in Tanzania: A review. *Information and Knowledge Management*, 5(2), 1-13.
- Saade', R. G., Nebebe, F., Tan, W. (2007). Viability of the "technology acceptance model" in multimedia learning environments: A comparative study. *Interdisciplinary Journal of Knowledge and Learning Objects* 3(1), 175-184.
- Saaid. N. (2010). The use of Technology (Audiovisual Aids) in teaching English as a foreign Language in Benghazi secondary schools (Unpublished Master thesis). Leicester University.
- Sadik A. (2006). Factors influencing teachers' attitudes toward personal use and school use of computers: New evidence from a developing nation. *Evaluation Review*, 30(1), 86-113.
- Sahin, I. & Thompson, A. (2006). Using Rogers' theory to interpret instructional computer use by COE faculty. *Journal of Research on Technology in Education*, 39(1), 81-104.
- Said, A., Lin, L., & Jim, P.(2009) . Barriers to adopting technology for teaching and learning in Oman. *Computers and Education*, 53(3), 575-590.
- Sale, J. E., Lohfeld, L. H., & Brazil, K. (2002). Revisiting the quantitative-qualitative debate: Implications for mixed-methods research. *Quality & Quantity*, 36(1), 43-53.
- Sam, N (2011). E-learning to redefine Nigeria educational sector. *NEXT Community*, 12-31.
- Samarawickrema, G., & Stacey, E. (2007). Adopting Web-Based Learning and Teaching: A case study in higher education. *Distance education*, 28(3), 313-333.
- Samarawickrema, G., & Stacey, E. (2007). Adopting Web-Based Learning and Teaching: A case study in higher education. *Distance Education*, 28(3), 313-333.
- Sampson, James P. Jr., (2012). A guide to quantitative and qualitative dissertation research. *Educational Psychology and Learning Systems Faculty Publications*. Retrieved 30 September 2015 from http://diginole.lib.fsu.edu/edpsy_faculty_publications/1

- Sánchez, R. A., & Hueros, A. D. (2010). Motivational factors that influence the acceptance of Moodle using TAM. *Computers in Human Behaviour*, 26(6), 1632-1640.
- San Martin, H., & Herrero, A. (2012). Influence of the user's psychological factors on the online purchase intention in rural tourism: Integrating innovativeness to the UTAUT framework. *Tourism Management*, 33 (2), 341-350.
- Sang, G., Valcke, M., van Braak, J., & Tondeur, J. (2010). Student teachers' thinking processes and ICT integration: Predictors of prospective teaching behaviors with educational technology. *Computers & Education*, 54(1), 103-112.
- Sarantakos, S. (2005). *Social research*, New York, Palgrave Macmillan.
- Saunders, M., Lewis, P. & Thornhill, A. (2009). *Research methods for business students* (5th ed). London: Pearson Education Limited.
- Saunders, M., Lewis, P. & Thornhill, A. (2012). *Research methods for business students* (6th ed). London, Pearson Education Limited
- Schaupp, L. C., Carter, L., & McBride, M. E. (2010). E-file adoption: A study of US taxpayers' intentions. *Computers in Human Behavior*, 26(4), 636-644.
- Schepers, J. & Wetzels, M. (2007). A meta-analysis of the technology acceptance model: Investigating subjective norm and moderation effects. *Information & Management*, 44(1), 90-103.
- Schneckenberg, D. (2010). Overcoming barriers for eLearning in universities—portfolio models for eCompetence development of faculty. *British Journal of Educational Technology*, 41(6), 979-991.
- Schumacher, P. & Morahan-Martin, J. (2001). Gender, internet and computer attitudes and experiences. *Computers in Human Behaviour*, 17(1), 95-110.
- Scott, D., & Usher, R. (2011). *Researching education: data, methods and theory in educational enquiry*. (2nd ed.). London: Continuum International Publishing Group.
- Sedana, I. G. N., & Wijaya, St. W. (2010). UTAUT model for understanding learning management system. *Internetworking Internet Journal*, 2(2), 27-32.
- Sekaran, U. & Bougie, R. (2010). *Research methods for business: A skill building approach*. UK: John Wiley & Sons
- Shaheeda, J., Dick, N., & Laura, C. (2007). The role of ICTs in higher education in South Africa: One strategy for addressing teaching and learning challenges. *International Journal of Education and Development using Information and Communication Technology*. 3(4), 131-142.
- Shaikh, Z. A. (2009). Usage, acceptance, adoption, and diffusion of Information and Communication Technologies in higher education: A measurement of critical factors. *Journal of Information Technology Impact (JITI)*, 9(2), 63-80.

- Shao, X., & Siponen, M. (2011). Consumer acceptance and use of information technology: Adding consumption theory to UTAUT2. In *Proceedings of SIGSVC Workshop. Sprouts: Working Papers on Information Systems*, 11(157), 11-157).
- Sharma, R. C. (2003, August). Barriers in using technology for education in developing countries. In *Information Technology: Research and Education, 2003. Proceedings. ITRE2003. International Conference on* (pp. 512-516). IEEE.
- Sharma, S., & Rai, A. (2003). An assessment of the relationship between ISD leadership characteristics and IS innovation adoption in organizations. *Information & Management*, 40(5), 391-401.
- Sheikhshoaei, F. & Oloumi, T. (2011). Applying the Technology Acceptance Model to Iranian engineering faculty libraries. *The Electronic Library*, 29(3),367-378.
- Shiau, W., Hsu, P., & Wang, J. (2009). Development of measures to assess the ERP adoption of small and medium enterprises. *Journal of Enterprise Information Management*, 22(1/2), 99-118.
- Shiels, H., McIvor, R., & O'Reilly, D. (2003). Understanding the implications of ICT adoption: Insights from SME. *Logistics Information Management*, 16 (5), 312-326.
- Shonola, S. A., & Joy, M. (2014). Barriers to m-learning in higher education institutions in Nigeria. Retrieved September 2 2015 from <http://www.researchgate.net/profile/Ade>
- Shroff, R. H. Deneen, C. C., & Ng, E. M. W. (2011). Analysis of the technology acceptance model in examining students' behavioural intention to use an e portfolio system. *Australasian Journal of Educational Technology*, 27(4), 600-618.
- Shuqair, B. (2009). Usage of the internet by the teaching members at Damascus university and related advantages. *Damascus University Journal*, 25(1), 455-499
- Singh, K. K. (2012). Measuring awareness and utilization of essential electronic information resources in management: A survey of management colleges in NCR, India. *International Journal of Information Dissemination and Technology*, 2(4), 254-261.
- Sivasubramaniyan, G. & Sadik Batcha, M. (2012). Use of e-resources by the faculty members of Pondicherry university and its affiliated colleges: An analytical study. *Indian Journal of Information Sources and Services*, 1(2), 36-41.
- Sivo, S. A., Saunders, C., Chang, Q., & Jiang, J. J. (2006). How low should you go? Low response rates and the validity of inference in IS questionnaire research. *Journal of the Association for Information Systems*, 7(6), 351-414.
- Slavin, R. (2007). *Educational research in an age of accountability*. Boston: Pearson Education.
- Smrkola, C. (2007). Technology acceptance predictors among student teachers and experienced classroom teachers. *Journal of Educational Computing Research*, 37(1), 65-82.
- Somekh, B., & Lewin, C. (2005). *Research methods in the social sciences*. Thousand Oak: Sage.

- Sørensen, K. & Stewart, J. (2004). Strategies of inclusion: Gender in the information society digital divides and inclusion measures: A review of literature and statistical trends on gender and ICT. Retrieved 11 September 2014 from <http://www.usaid.gov/wid/pubs>
- Soydal, I., Alırb, G., & Ünala, Y. (2011). Are Turkish universities ready for e-learning?: A case of Hacettepe University Faculty of Letters. *Information Services & Use*, 31, 281-291.
- Spino, M., Kahle-Piasecki, L. & Lambert, J. (2011). Mobile Handheld Devices in Preparing Teachers: The Role of PDAs and Smartphones. In M. Koehler & P. Mishra (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 2724-2729). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).
- Spotts, T. H., Bowman, M. A., & Mertz, C. (1997). Gender and use of instructional technologies: A study of university faculty. *Higher Education*, 34(4), 421-436.
- Steneck, N. H. (1994). Research universities and scientific misconduct: History, policies and the future. *Journal of Higher Education*, 65(3), 310-330.
- Straub, E. (2009). Understanding technology adoption: Theory and future directions for informal learning. *Review of Educational Research*, 79(2), 625-649.
- Stuart, W.D. (2000). Influence of sources of communication, user characteristics and innovation characteristics on adoption of a communication technology (Doctoral dissertation, University of Kansas). Retrieved from *Proquest Digital Dissertations and Theses database*. (Thesis No. 9998115).
- Suebsin, C., & Gerdri, N. (2009, August). Key factors driving the success of technology adoption: Case examples of ERP adoption. In *Management of Engineering & Technology, 2009. PICMET 2009. Portland International Conference on* (pp. 2638-2643). IEEE.
- Sugar, W., Crawley, F., & Fine, B. (2004). Examining teachers' decisions to adopt new technology. *Educational Technology and Society*, 7(4), 201-213.
- Suhendra, E. S., Hermana, B. & Sugiharto, T. (2009, June). Behavioural analysis of information technology acceptance in Indonesia small enterprises. A Paper presented at Anadolu International Conference in Economics, Eskisehir, Turkey. Retrieved 8 July, 2014 from <http://econ.anadolu.edu.tr/fullpapers/Suhendra>
- Sultan, N. (2010). Cloud computing for education: A new dawn?. *International Journal of Information Management*, 30(2), 109-116.
- Šumak, B., Heričko, M., Pušnik, M., & Polančič, G. (2011). Factors affecting acceptance and use of Moodle: An empirical study based on TAM. *Informatica*, 35(1), 91-100.
- Sun, H., & Zhang, P. (2006). The role of moderating factors in user technology acceptance. *International Journal of Human-Computer Studies*, 64(2), 53-78.

- Surry, D. W., & Gustafson, K. L. (1994). The Role of Perceptions in Instructional Development and Adoption. Retrieved 14 October 2015 from <http://files.eric.ed.gov/fulltext/ED37376>
- Tai, Y., & Ting, Y. L. (2011). Adoption of mobile technology for language learning: Teacher attitudes and challenges. *The JALT CALL Journal*, 7(1), 3-18.
- Taiwo, A. A., & Downe, A.G. (2013). The theory of user acceptance and use of technology (UTAUT): A meta-analytic review of empirical findings. *Journal of Theoretical and Applied Information Technology*. 49 (1), 48-58.
- Tarafdar M, Tu Q, & Ragu-Nathan T. (2010). Impact of technostress on end-user satisfaction and performance. *Journal of Management Information Systems*, 27(3), 303-334.
- Tarus, J. K., Gichoya, D., & Muumbo, A. (2015). Challenges of implementing e-learning in Kenya: A case of Kenyan public universities. *The International Review of Research in Open and Distributed Learning*, 16(1), 120-141.
- Tashakkori, A., & Teddlie, C. (Eds.). (2003). *Handbook of mixed methods in social & behavioral research*. Thousand Oaks, CA: Sage.
- Taylor, G. R. (2000). Quantitative research methods. In G. R. Taylor (Ed.), *Integrating Quantitative and Qualitative Methods in Research* (pp. 69-78). New York: University Press of America.
- Taylor, P.C. & Medina, M.N.D.(2013). Educational research paradigms: from positivism to multiparadigmatic. *The Journal of Meaning-Centered Education*. Retrieved 16 October, 2014 from <http://www.meaningcentered.org/journal/volume01/educational-research-paradigms-from-positivism-to-multiparadigmatic>
- Taylor, S., Todd, P. A. (2001). Understanding information technology usage: A test of competing models, *Information Systems Research*, 6(2), 144-176.
- Taylor, S. & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research*, (6)2, 144-176.
- Tedla, B. A. (2012). Understanding the importance, impacts and barriers of ict on teaching and learning in East African Countries. *International Journal for e-Learning Security*, 2(3/4), 199-207.
- Tedre, M., Bangu, N., & Nyagava, S. I. (2009). Contextualized IT education in Tanzania: Beyond standard IT curricula. *Journal of Information Technology Education*, 8(1), 101-124.
- ten Kate, S., Haverkamp, S., Mahmood, F., & Feldberg, F. (2010). Social network influences on technology acceptance: A matter of tie strength, centrality and density. *BLED 2010 Proceedings, Paper, 40*.
- Tella, Adeyinka (2013). Predictive factors for the intention to adopt blackboard course management system. International Conference on Emerging Trends of E-Learning and Online Education Technology (ICETEOET 2013) – Abu Dhabi, UAE Proceedings Retrieved 14 October 2015 from <http://www.ijitcs.com>

- Tella, A. (2011). Availability and Use of ICT in South-Western Nigeria Colleges of Education. *African Research Review*, 5(5), 315-331.
- Teng, J. T. C., Grover, V., & Guttler, W. (2002). Information technology innovations: General diffusion patterns and its relationship to innovation characteristics. *IEEE Transactions on Engineering Management*, 49(1), 13-27.
- Teo, T. (2008). Pre-service teachers' attitudes towards computer use: A Singapore survey. *Australasian Journal of Educational Technology*, 24(4), 414-424.
- Teo, T. (2010). Examining the influence of subjective norm and facilitating conditions on the intention to use technology among pre-service teachers: a structural equation modeling of an extended Technology Acceptance Model. *Asia Pacific Education Review*, 11(2), 253-262.
- Teo, T. (2011). Factors influencing teachers' intention to use technology: Model development and test. *Computers & Education*, 57(4), 2432-2440.
- Teo, T., Lee, C. B., & Chai, C. S. (2008). Understanding pre-service teachers' computer attitudes: applying and extending the Technology Acceptance Model (TAM). *Journal of Computer Assisted Learning*, 24(2), 128-143.
- Teo, T., Luan, W.S., & Sing, C. C. (2008). A cross-cultural examination of the intention to use technology between Singaporean and Malaysian pre-service teachers: An application of the Technology Acceptance Model (TAM). *Educational Technology & Society*, 11(4), 265-280.
- Teo, T. S., & Pian, Y. (2003). A contingency perspective on Internet adoption and competitive advantage. *European Journal of Information Systems*, 12(2), 78-92.
- Terpend, R., Gattiker, T. F., & Lowe, S. E. (2014). Electronic textbooks: Antecedents of students' adoption and learning outcomes. *Decision Sciences Journal of Innovative Education*, 12(2), 149-173.
- Terre Blanche, M. & Durrheim, K. (2002). *Research in practice. Applied methods for the social sciences*. Cape Town: UCT Press.
- Tesch, R. (1990). *Qualitative research: analysis, types and software tools*. London, United Kingdom: Falmer.
- Texas State Auditor's Office, Methodology Manual (n.d). Data Analysis: Analyzing Data - Inferential Statistics 2. Retrieved 5 March 2016 from <http://www.preciousheart.net/chapla>
- Thomas, R. M. (2003). *Blending qualitative and quantitative research methods in theses and dissertations*. Thousand Oaks, California: Sage.
- Thompson, R. L., Higgins, C. A. & Howell, J. M. (1991). Personal computing: Toward a conceptual model of utilization. *MIS Quarterly*, 15(1), 124-143.
- Thomson, L. F., & Lynch, B. J. (2003). Web-based instruction: Who is inclined to resist it and why? *Journal of Educational Computing Research*. 29(3), 375-385.

- Tian B. (2004). *UNESCO Meta-survey on the use of technologies in education in Malaysia*. Retrieved 9 March 2016 from http://www.unescobkk.org/fileadmin/user_upload/ict/Meta
- Tibenderana, P. K. G., & Ogao, P. J. (2009). Information Communication Technologies Acceptance and Use among University Communities in Uganda: a model for hybrid library services end-users. *International Journal of Computing and ICT Research*, Special Issue, 1 (1), 60-75.
- Tien, F. F., & Fu, T. T. (2008). The correlates of the digital divide and their impact on college student learning. *Computers & Education*, 50(1), 421-436.
- Tiryakioglu, F. & Erzurum, F. (2011). Use of Social Networks as an Education Tool. *Contemporary Educational Technology*, 2(2), 135-150.
- Tobbin, P. (2010). Modeling Adoption of Mobile Money Transfer: A Consumer Behavior Analysis. Proceedings of the 2nd International conference on M4D Mobile Communication Technology for Development M4D 2010 at Kampala, Uganda.
- Toivanen, H. (2011). From ICT towards information society. Policy strategies and concepts for employing ICT for reducing poverty. Retrieved 5 October 2015 from www.researchgate.net/
- Tornatzky, L. G., & Klein, K. J. (1982). Innovation characteristics and innovation adoption-implementation: A meta-analysis of findings. *Engineering Management, IEEE Transactions* (1), 28-45.
- Touray, A., Salminen, A. and Mursu, A. (2013). ICT barriers and critical success factors in developing countries. *The Electronic Journal on Information Systems in Developing Countries*, 56(7), 1-17.
- Towndrow, P. A., Silver, R. E., & Albright, J. (2009). Setting expectations for educational innovations. *Journal of Educational Change*, 11(4), 425-455.
- Tshukundu, P. (2002). *Empowering people to cross the digital divide: A gender dimension*. Paper presented at World Telecommunications Day, Gaborone, May 2002.
- Tsvere, M., Swamy, S., & Nyaruwata, T. L. (2013). Perceived competence of Zimbabwean academics in the use of Information Technology in university academic business. *International Journal of Science and Research*, 2(8), 284-289.
- Tumuhairwe, G. K. (2013). Analysis of Library and Information Science/Studies (LIS) education today: The inclusion of indigenous knowledge and multicultural issues in LIS Curriculum. A Paper presented at the *IFLA conference Singapore August 2013*. Retrieved 10 April 2014 from <http://library.ifla.org/276/1/125-tumhuwaire-en.pdf>
- Tung, F. C., & Chang, S. C. (2008). An empirical investigation of students' behavioral intentions to use the online learning course websites. *British Journal of Educational Technology*, 39(1), 71-83.
- Twinomujuni, J. A. (2011). *Problems in ICT implementation in selected institutions of higher learning in Kabale District* (Unpublished Masters thesis). Makerere University, Uganda

- Umoru, T. A., & Okeke, A. U. (2012, May). M-learning in Nigerian universities: Challenges and possibilities. Paper presented at the Global Awareness Society International 21st Annual conference, New York City.
- UNESCO, (2003). *Manual for pilot testing the use of indicators to assess impact of ICT use in education*. Retrieved 9 September 2014 from <http://www.unescobkk.org/education>
- University of Ibadan Annual Report (2013). University of Ibadan annual report 2013. Retrieved 30 April 2014 from <http://ui.edu.ng/sites/default/files/ui%20annual>
- Unwin, T. (2008). Survey of e-learning in Africa. E-Learning Africa. Retrieved 12 October 2015 from http://www.elearning-africa.com/pdf/survey/elareport_timunwin.pdf
- Uprichard, E. (2013). Sampling: bridging probability and non-probability designs. *International Journal of Social Research Methodology*, 16(1), 1-11.
- Usluel, Y. K., Aşkar, P., & Baş, T. (2008). A structural equation model for ICT usage in higher education. *Journal of Educational Technology & Society*, 11(2), 262-273.
- Utomo, H., & Dodgson, M. (2001), Contributing factors to the diffusion of IT within small and medium sized firms in Indonesia. *Journal of Global Information Technology Management*, 4(2), 22-37.
- Uys, P., Dalgarno, B., Carlson, L., Crampton, A., & Tinkler, J. (2011). A 2010 snapshot of educational technology use by teaching staff of Charles Sturt University. *Changing Demands, Changing Directions. Proceedings ascilite Hobart*, pp. 1255-1269.
- Uzoka, F. 2008. Organisational influences on e-commerce adoption in a developing country context using UTAUT. *International Journal of Business Information Systems*, 3(3), 300-316.
- Valasidou, A, Sidiropoulos, D., Hatzis, T., & Bousiou- Makridou, D. (2005, June). Guidelines for the design and implementation of e learning programmes. Proceedings of the (IADIS) International Conference IADIS E- Society, Qawra, Malta.
- van Ark, B., Inklaar, R., & McGuckin, R. H. (2002). Changing gear: Productivity, ICT and service: Europe and the United States, University of Groningen and The Conference Board, mimeograph.
- van Raaij, E. M., & Schepers, J. J. L. (2008). The acceptance and use of a virtual learning environment in China. *Computers & Education*, 50(3), 838-852.
- Vander Stoep, S. W., & Johnston, D. D. (2009). *Research methods for everyday life: blending qualitative and quantitative approaches*. San Francisco: Jossey Bass.
- Vannatta, R. A. (2000). Evaluation to planning: Technology integration in a school of education. *Journal of Technology and Teacher Education*, 8(3): 231-246.
- Venkatesh, V. E. (2000). Theoretical extension of the technology acceptance model: Four longitudinal Field Studies. *Management Science*, 45, 186-204.
- Venkatesh, V. & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences*, 39(2), 273-315.

- Venkatesh, V., Davis, F., & Morris, M. (2007). Dead or alive? The development, trajectory and future of technology adoption research. *Journal of the Association of Information Systems*, 8(4), 267-268.
- Venkatesh, V. & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: four longitudinal field studies. *Management Science*, 45(2), 186-204.
- Venkatesh, V., & Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influences, and their role in technology acceptance and usage behavior. *MIS Quarterly*, 24(1), 115-139.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. (2003). User acceptance of information technology: toward a unified view. *MIS Quarterly*, 27, 425-478.
- Venkatesh, V., Morris, M. G., Sykes, T. A., & Ackerman, P. L. (2004). Individual reactions to new technologies in the workplace: the role of gender as a psychological construct. *Journal of Applied Social Psychology*, 34, 445-467.
- Venkatesh, V., Morris, M. G. & Ackerman, P. L. (2000). A longitudinal field investigation of gender differences in individual technology adoption decision making processes. *Organisational Behaviour and Human Decision Processes*, 83(1), 33-60.
- Venkatesh, V. & Smith, R. H. (1999). Creation of favourable user perceptions: Exploring the Role of Intrinsic Motivation. *MIS Quarterly* (23)2, 239-260.
- Venkatesh, V., Sykes, T., & Zhang, X. (2011, January). 'Just what the doctor ordered': a revised UTAUT for EMR system adoption and use by doctors. In *System Sciences (HICSS), 2011 44th Hawaii International Conference on* (pp. 1-10). IEEE.
- Venkatesh, V., Thong, J. Y. L., Chan, F. K. Y., Hu, P. J. H., & Brown, S. A. (2011). Extending the two-stage information systems continuance model: incorporating UTAUT predictors and the role of context. *Information Systems Journal*, 21(6), 527-555.
- Venkatesh, V., & Zhang, X., (2010). Unified theory of acceptance and use of technology: U.S. vs. China. *Journal of Global Information Technology Management*, 13(1), 5-27.
- Vesilind, P. A (1995). The responsible conduct of academic research. In A.L. DeNeef & C.D Godwin (Eds.). *The academic's handbook* (2nd ed., pp 104 – 111). Urham, NC: Duke University Press.
- Waarts, E., Everdingen, Y. V., & Hillegersberg, J. V. (2002). The dynamics of factors affecting the adoption of innovations. *The Journal of Products Innovation Management*, 19(6), 412-423.
- Wainwright, D., Green, G., Mitchell, E., & Yarrow, D. (2005). Toward a framework for benchmarking ICT practice, competence and performance in small firms. *Performance Management: The International Journal for Library and Information Services*, 6 (1) 39-52.
- Walter, M. (2006). *Social Science methods: An Australian perspective*. Oxford, New York: Oxford University Press.

- Wamalwa, E. J., & Wamalwa, E. W. (2014). Towards the utilization of instructional media for effective teaching and learning of English in Kenya. *Journal of Education and Practice*, 5(31), 140-148.
- Wang, H. Y., & Wang, S. H. (2010). User acceptance of mobile internet based on the unified theory of acceptance and use of technology: Investigating the determinants and gender differences. *Social Behavior and Personality: an international journal*, 38(3), 415-426.
- Wang, W.T., & Wang, C. C. (2009). An empirical study of instructor adoption of web-based learning systems. *Computers and Education*, 53(3), 761-774.
- Wang, Y. S., & Shih, Y. W. (2009). Why do people use information kiosks? A validation of the Unified Theory of Acceptance and Use of Technology. *Government Information Quarterly*, 26(1), 158-165.
- Wang, Y., Wu, M., & Wang, H., (2009). Investigating the determinants and age and gender differences in the acceptance of mobile learning. *British Journal of Educational Technology*, 40(1), 92-118.
- Wanjiku, R. (2009, June 12). East Africa universities take advantage of Google cloud. Computerworld. Retrieved 18 September from <http://news.idg.no/cw/art.cfm>
- Wario, R. D. (2014). Attitudes towards computer usage as predictors of the classroom integration of information and communication technology at a rural South African university (Doctoral dissertation, University of The Free State). Retrieved 2 September 2015 from <http://etd.uovs.ac.za/ETD-db/theses/available/etd-08042014-155209>
- Warschauer, M. (2004). *Technology and social inclusion: Rethinking the digital divide*. Cambridge, MA: MIT Press.
- Waycott, J., Bennett, S., Kennedy, G., Dalgarno, B. & Gray, K. (2010). Digital divides? Student and staff perceptions of information and communication technologies. *Computers & Education*, 54(4), 1202-1211.
- Weber, D. M., & Kauffman, R. J. (2011). What drives global ICT adoption? Analysis and research directions. *Electronic Commerce Research and Applications*, 10(6), 683-701.
- Welman, C., Kruger, F. & Mitchell, B. (2005). *Research Methodology* (3rd ed.). London: Oxford University Press.
- Wild, F., Ullmann, T., Scott, P., Rebedea, T. & Hoisl, B. (2011, March). Applicability of the technology acceptance model for widget-based personal learning environments. In: 1st Workshop on Exploring Fitness and Evolvability of Personal Learning Environments (EFEPLE'11), La Clusaz, France.
- Williams, C. (2007). Research Methods. *Journal of Business & Economic Research*, 5(3), 65-72
- Willis, J.W. (2007). *Foundations of qualitative research: interpretive and critical approaches*: Thousand Oaks, CA: Sage.
- Wilson, T. D. (1999). Models in information behaviour research. *Journal of Documentation*, 55(3), 249-270.

- Wilson, W. (2003). Faculty perceptions and uses of instructional technology: A study at one university system revealed the current state of technology and some steps that could improve it. *Educause Quarterly*, 2, 60-62.
- Wong, K., Osman, R., Goh, P. S. C. & Rahmat, M. K. (2013). Understanding student teachers' behavioural intention to use technology: Technology Acceptance Model (TAM) validation and testing. *International Journal of Instruction*, 6(1), 89-104.
- Wong, P. K. (2003). Global and national factors affecting e-commerce diffusion in Singapore, by individual professionals: Towards an integrative view. *Information and Management*, 43, 350-363.
- World Bank (2014). *The little data book on information and communication technology 2014*. Washington, DC: World Bank.
- Wu, L., Li, J. Y., & Fu, C. Y. (2011). The adoption of mobile healthcare by hospital's professionals: An integrative perspective. *Decision Support Systems*, 51(3), 587-596.
- Wu, Y., Tao, Y., & Yang, P. (2007). Using UTAUT to explore the behaviour of 3G Mobile Communication Users. Retrieved 8 July 2014 from <http://tao.nuk.edu.tw/papers>
- Xu, D., & Wang, H. (2006). Intelligent agent supported personalization for virtual learning environments. *Decision Support Systems*, 42(2), 825-843.
- Yan, H., & Fiorito, S. S. (2007). CAD/CAM diffusion and infusion in the US apparel industry. *Journal of Fashion Marketing and Management*, 11(2), 238-245.
- Yang, H. H, Mohamed, D & Beyerbach, B. (1999). An investigation of computer anxiety among vocational-technical teachers", *Journal of Industrial Teacher Education*, 37(1), 64-82.
- Yang, Y. (2008). Examining university students' and academics' understandings of ICTs in higher education. Paper presented at the Annual meeting of the Australian Association for Research in Education (AARE), Brisbane, Australia. Nov.30 -Dec 4, 2008.
- Yaqub, J., Bello, H. T., Adenuga, I. A., & Ogundeji, M. O. (2013). The Cashless Policy in Nigeria: Prospects and Challenges. *International Journal of Humanities and Social Science*, 3(3), 200-212.
- Yayla, A. & Hu, Q. (2007, June). User acceptance of e-commerce technology: A meta analytic comparison of competing models. In *Proceedings of the 13th European conference*, Switzerland (pp. 179-190).
- Yin, R. K. (2003). *Case studies research: Design and methods*. Thousand Oaks: Sage.
- Yin, R. K. (2011). *Qualitative research from start to finish*. New York: Guilford Press.
- Yohon, T. & Zimmerman, D. (2006). An exploratory study of adoption of software and hardware by faculty in the liberal arts and sciences. *Journal of Technical Writing and Communication*, 36(1), 9-27.
- Yonazi, J. J. (2012). Exploring Facilitators and Challenges Facing ICT4D in Tanzania. *Journal of e-Government Studies and Best Practices*, 1-16.

- Young, B. J. (2000). Gender differences in student attitudes toward computers. *Journal of Research on Computing in Education*, 33(2), 204-217.
- Yuen, A. H. K & Ma, W. W. K (2002). Gender differences in teacher computer acceptance. *Journal of Technology and Teacher Education*, 10(3), 365-368.
- Yusuf, M. & Balogun, M. R. (2011). Student-teachers competence and attitude towards information and communication technology: A case study in a Nigeria university. *Contemporary Educational Technology*, 21(1), 18-36.
- Yusuf, M. O., & Onasanya, S. A. (2004). Information and communication technology (ICT) and teaching in tertiary institutions. In *A paper presented at the workshop on teaching for newly recruited university lecturers organized by Faculty of Education, University of Ilorin*.
- Zare-ee, A. (2011). University teachers' views on the use of information communication technologies in teaching and research. *The Turkish Online Journal of Educational Technology*, 10(3), 318-327.
- Zayim, N., Yildirim, S. & Saka, O. (2006). Technology adoption of medical faculty in teaching: differentiating factors in adopter categories. *Educational Technology & Society*, 9(2), 213-222.
- Zhan, Y., Wang, P., & Xia, S. (2011, October). Exploring the drivers for ICT adoption in government organization in China. In *Business Intelligence and Financial Engineering (BIFE), 2011 Fourth International Conference on* (pp. 220-223). IEEE.
- Zhang, Z., Tousignant, W., & Xu, S. (2012). Introducing accessible ICT to teacher candidates: A way to address equity issues. *Journal of Literacy and Technology*, 13(1), 2-18.
- Zhao, Y, Pugh, K, Sheldon, S, and Byers, J (2002). Conditions for classroom technology innovations. *Teachers College Record*, 104(3), 482-515.
- Zhou, T., Lu, Y., & Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. *Computers in Human Behavior*, 26(4), 760-767.
- Zhou, G., & Xu, J. (2007). Adoption of educational technology: How does gender matter? *International Journal of Teaching and Learning in Higher Education*, 19(2), 140-153.
- Zhu, C. (2015). Organisational culture and technology enhanced innovation in higher education. *Technology, Pedagogy and Education*, 24(1), 65-79.

Appendix 1: Survey Questionnaire for Academics

Adoption and Use of Electronic Instructional Media among Academics in South West Nigeria

This questionnaire is meant for academics. Thank you for agreeing to participate in this survey for the completion of a PhD study on Adoption and Use of Electronic Instructional Media among Academics in South West Nigeria. All information provided will be used only for educational purpose and will be kept anonymous and confidential. It will take you approximately 15 minutes to complete the questionnaire.

A: Personal Data of Respondents

A1. Please indicate your institution

1. University of Ibadan [] 2. Covenant university []

A2. Indicate your Faculty/School

1. Arts/ Leadership Development []
2. Technology/ Engineering & Technology []
3. Science/ Natural & Applied Science []
4. Other (please specify)

A3. State your gender

1. Female [] 2. Male []

A4. State your age range

1. 25 - 35 [] 2. 36 - 46 [] 3. 47- 57 [] 4. 58 -68 [] 5. 69 and above []

A5. Indicate your highest educational qualification

1. M.Sc. [] 2. M.A [] 3. PhD [] 4. Others (Please specify).....

A6. Please state the number of years you have served as an academic

1. Less than a year [] 2. 1-5 years [] 3. 6-10 years [] 4. 11-15 years []
5. [] 16-20 years [] 6. 20 years and above []

A7. Please provide your designation in the university by ticking appropriately

1. [] Professor
2. [] Reader/ Associate Professor
3. [] Senior Lecturer
4. [] Lecturer I
5. [] Lecturer II
6. [] Assistant Lecturer

B. Adoption of electronic instructional media

The table below consists of types of electronic instructional media (hardware, software, e-resources and social networking sites). Kindly indicate those you have adopted for teaching purposes by ticking (√) as it applies to you.

S/N	Item 1: Types of Electronic Instructional Media	Not adopted (1)	Fairly adopted (2)	Fully adopted (3)
Hardware				
B1	Personal Computer (Laptop)			
B2	Multimedia Projector			
B3	Scanner			
B4	Digital camera			
B5	Printer			
B6	Mobile phones (Smart Phones)			
B7	Mobile devices (e.g. I pad, Notebooks, Tablet)			
B8	CD/DVD			
B9	Interactive whiteboard			
Software				
B10	Word Processing (e.g. Microsoft Office Word)			
B11	Presentation software (e.g. PowerPoint)			
B12	Spreadsheets (e.g. Microsoft Office Excel)			
B13	Learning Management System(e.g. MOODLE, Blackboard, WebCT, Desire2Learn, Sakai, OLAT etc)			
B14	Turnitin (Plagiarism software)			
E- Resources				
B15	Internet			
B16	E-mail			
B17	Web resources			
B18	Electronic Databases such as EBSCOHOST, SCIENCE DIRECT etc			
B19	e books			
B20	e journals			
Social Networking sites				
B21	a. Facebook			
B22	b. Twitter			
B23	c. Wikis			
B24	d. Blog			
B25	e. You Tube			

2. Below are statements that express the extent of adoption and use of electronic instructional For each item, tick (√) as it applies to you. 1= Strongly Disagree 2= Disagree 3= Undecided 4 = Agree 5 = Strongly Agree

	Item 2: Extent of adoption of electronic instructional media	1	2	3	4	5
B26	I have made changes to accommodate electronic instructional media in my lectures					
B27	I regularly pursue innovative ways to incorporate electronic instructional media into my lectures					
B28	I give my students course materials in electronic formats					
B29	I recommend and direct my students to reading lists in databases, internet and e-books					
B30	I have created e mail accounts for my students to communicate with me and other members of the class					
B31	I have created online groups to facilitate teaching, delivery of course content and discussion among my students					
B32	I design my courses in such a way that my students can use electronic instructional media for their own individual learning/study					
B33	I incorporate electronic instructional media in my teaching to such an extent that it has become standard learning tools for my students					
B34	I incorporate electronic instructional media in my teaching to such an extent that my students can collaborate with other students even after lectures					

C. Use of Electronic Instructional Media.

The table below contains a list of electronic instructional media. Indicate in the boxes on each row your frequency of use. Please tick (✓) appropriately those that apply to you.

	Item 3: Frequency of use					
	Hardware	Daily	Weekly	Monthly	Rarely	Never
C1	Personal Computer (Laptop)					
C2	Multimedia Projector					
C3	Scanner					
C4	Digital camera					
C5	Printer					
C6	Mobile phones (Smart Phones)					
C7	Mobile devices (e.g. I pad, Notebooks, Tablet)					
C8	CD/DVD					
C9	Interactive whiteboard					
	Software	Daily	Weekly	Monthly	Rarely	Never
C10	Word Processing (e.g. Microsoft Office Word)					
C11	Presentation software (e.g. PowerPoint)					
C12	Spreadsheets (e.g. Microsoft Office Excel)					
C13	Learning Management System(e.g. MOODLE, Blackboard, WebCT, Desire2Learn, Sakai, OLAT etc)					
C14	Plagiarism software e.g Turnitin					
	E- Resources					
C15	Internet					

C16	E-mail						
C17	Web resources						
C18	Electronic Databases such as EBSCOHOST, SCIENCE DIRECT etc						
C19	e books						
C20	e journals						
Social Networking sites							
C21	a. Facebook						
C22	b. Twitter						
C23	c. Wikis						
C24	d. Blog						
C25	e. You Tube						

6a. For what purpose do you use the following hardware? You may tick (√) more than one. Where 1= communication with students 2= communication with colleagues 3= lecture presentation 4 = lecture preparation 5 = creating course website 6= producing assignment/course manuals 7 = accessing online teaching resources 8 = blogging 9 = interactive teaching 10 = data analysis 11= processing student result 12= online learning/discussion 13 = checking students plagiarism 14 = students to turn in assignments 15 = students' submission of research essays (thesis and term papers) 16. Creating online forum for my students 17 = teleconferencing/videoconferencing.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Hardware																	
C26	Personal Computer																	
C27	Multimedia Projector																	
C28	Scanner																	
C29	Digital camera																	
C30	Printer																	
C31	Smart Phones																	
C32	Ipad, tablet																	
C33	CD/DVD																	
C34	Interactive board																	

6b. For what purpose do you use the following software? You may tick (√) more than one. Where 1= communication with students 2= communication with colleagues 3= lecture presentation 4 = lecture preparation 5 = creating course website 6= producing assignment/course manuals 7 = accessing online teaching resources 8 = blogging 9 = interactive teaching 10 = data analysis 11= processing student result 12= online learning/discussion 13 = checking students plagiarism

14 = students to turn in assignments 15 = students' submission of research essays (thesis and term papers) 16. Creating online forum for my students 17 = teleconferencing/videoconferencing.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Software																	
C35	Microsoft Word																	
C36	PowerPoint																	
C37	Spreadsheet																	
C38	MOODLE																	
C39	Plagiarism software																	

6c. For what purpose do you use the following electronic resources and social networking sites? You may tick (√) more than one. Where 1= communication with students 2= communication with colleagues 3= lecture presentation 4 = lecture preparation 5 = creating course website 6= producing assignment/course manuals 7 = accessing online teaching resources 8 = blogging 9 = interactive teaching 10 = data analysis 11= processing student result 12= online learning/discussion 13 = checking students plagiarism 14 = students to turn in assignments 15 = students' submission of research essays (thesis and term papers) 16. Creating online forum for my students 17 = teleconferencing/videoconferencing.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	E-Resources																	
C40	Internet																	
C41	E mail																	
C42	Web resources																	
C43	Electronic Databases																	
C44	e-books																	
C45	e-journals																	
	Social Networking Sites																	
C46	Facebook																	
C47	Twitter																	
C48	Wikis																	
C49	Blog																	
C50	You Tube																	

D. Factors influencing adoption and use of electronic instructional media

Using a five point Likert scale, indicate how electronic instructional media has been useful or appropriately fits into your teaching endeavours. Please tick as follows: 1= Strongly Disagree 2= Disagree 3= Undecided 4 = Agree 5 = Strongly Agree

	Item 5: Performance expectancy	1	2	3	4	5
--	---------------------------------------	---	---	---	---	---

D1	Electronic instructional media are useful in my lectures					
D2	Electronic instructional media enable me to accomplish tasks more quickly					
D3	Electronic instructional media usage enhances my teaching in terms of content and delivery					
D4	Using electronic instructional media would make it easier to do my job.					
D5	Electronic instructional media usage improve my productivity					
D6	electronic instructional media usage provide me access to the internet,					
D7	Electronic instructional media provide me access to up to date resources for the courses I teach					

	Item 6: Effort Expectancy/Perceived Ease of Use	1	2	3	4	5
D8	Electronic instructional media are easy to use					
D9	The use of electronic instructional media do not require a lot of effort					
D10	My interaction with electronic instructional media (hardware, software, application and resources) is clear and understandable					
D11	It is easy to use electronic instructional media even when one has not used it before					
D12	Using the electronic instructional media is not frustrating					
D13	Learning to interact with or use electronic instructional media is easy for me					
D14	The use of electronic instructional media require high level of media /digital literacy skills					

	Item 7: Social influence/image	1	2	3	4	5
D15	People who are important to me such as my Dean, HOD, colleagues, etc. think I should use electronic instructional media in my teaching					
D16	My students particularly think I should use electronic instructional media					
D17	Using electronic instructional media is a status symbol in my institution					
D18	Electronic instructional media usage improves my prestige/image among my students					
D19	Electronic instructional media usage improves my prestige/image among my colleagues					

	Item 8: Facilitating conditions/Organisational factors	1	2	3	4	5
D20	Instructional technologists/ persons are available to provide assistance with difficulty on use of electronic instructional media					
D21	There is access to the internet in lecture rooms and connectivity is very fast and reliable					
D22	My institution has made provision for uninterruptible power supply					
D23	My institution has made available the resources(adequate computers and internet connectivity for students in the department/faculty)					
D24	My institution has available space (lecture rooms or dedicated computer laboratories with internet access for students in the department/faculty)					
D25	There are plug-ins for unlimited number of computers in lecture rooms					

	Item 9: Compatibility	1	2	3	4	5
D26	Electronic instructional media is appropriate for teaching my courses					
D27	It bothers me to use electronic instructional media when I could do my teaching without them					
D28	I do not need electronic instructional media in my work					
D29	Electronic instructional media usage in teaching makes me redundant					
D30	I worry about the privacy of my information when using electronic instructional media					
D31	I worry that electronic instructional media are not secure enough to protect my personal information, intellectual content or right					

	Item 10: Trialability	1	2	3	4	5
D32	It is easy to use electronic instructional media more frequently after trying them out					
D33	A trial convinced me that using electronic instructional media is better than using traditional method of teaching					
D34	I do not need a trial to be convinced which electronic instructional media. are the best for me					
D35	It did not take me much time to try electronic instructional media before I finally accepted their use					
D36	It is better to experiment with electronic instructional media before adopting them					

	Item 11: Observability	1	2	3	4	5
D37	I was influenced by what I observed as the benefits of using electronic instructional media.					
D38	I observed others using electronic instructional media and saw the advantages of doing so.					
D39	I have seen how my colleagues use electronic instructional media before I could use them.					

Behavioural intention

Kindly indicate how your experience with the adoption and use of electronic instructional media has affected your intention to adopt, use/continue to use them in your teaching endeavours.

Where 1= Strongly Disagree 2= Disagree 3= Undecided 4 = Agree 5 = Strongly Agree,

	Item 12: Behavioural intention	1	2	3	4	5
D40	I will use electronic instructional media for teaching my students on a regular basis					
D41	I will use electronic instructional media for my teaching at present more frequently					
D42	I will strongly recommend other academics to use electronic instructional media for their teaching purposes					
D43	In future, I intend to use electronic instructional media more because of the benefits					
D44	I intend to use electronic instructional media because it is appropriate for my working style					

D45	I will keep using electronic instructional media based on my observation in my faculty/department,					
-----	--	--	--	--	--	--

E. Media Literacy Skills (MLS)

Kindly indicate your level of agreement with the following statement Using a five point Likert scale, where 1= Strongly Disagree 2= Disagree 3= Undecided 4 = Agree 5 = Strongly Agree

	(Item 13: MLS): I feel competent to ...	1	2	3	4	5
E1	use different types of electronic instructional media (such as computer, multimedia projector , scanner, presentation software, MOODLE, e books, etc) in my teaching endeavours					
E2	use the internet to search for relevant resources for my lectures					
E3	develop search strategies using keywords and Boolean terms to locate information on the internet from one or more sources for my lectures					
E4	identify the electronic resources appropriate to prepare for my lecture					
E5	download files from the internet					
E6	upload file on the internet					
E7	save files from a web page					
E8	send attachments with e-mail messages					
E9	use web 2.0 tools/technologies (e.g Facebook, Twitter, Wikis, Skype etc)					
E10	design course content using electronic instructional media to facilitate mastery of the subject					
E11	communicate with my students effectively using electronic instructional media					
E12	take part in online discussion					

F. Challenges to adoption and use of electronic instructional media

Kindly indicate the challenges or obstacles you have in adopting or using electronic instructional media in your teaching. Please tick as appropriate, where 1= Strongly Disagree 2= Disagree 3= Undecided 4 = Agree 5 = Strongly Agree.

	Item 14: Challenges/ Obstacles	1	2	3	4	5
F1	Lack of top management support					
F2	Lack of fund					
F3	Lack of training on use of emerging technologies for teaching and learning					
F4	Inadequate support from internal IT staff					
F5	Limited access to electronic instructional media					
F6	Inadequate budgetary allocation for acquisition and installation of electronic instructional media					
F7	Poor culture of using technology for teaching					
F8	Low bandwidth					
F9	Lack of institutional policy on electronic instructional media adoption and use					
F10	Lack of training					
F11	Too much workload of academics					
F12	ICT anxiety among academics					
F13	Limited availability of software and hardware					
F14	Poor and Unreliable Internet access					
F15	Lack of support from subject/ faculty librarians					
F16	The student population is too large					
F17	Lack of technical support					
F18	Unreliable power supply					
F19	Time					

F20. Other obstacles please specify:

.....

Thank you.

Appendix 2

Interview Schedule for University Librarians, Deans/ Deputy Deans, and Directors of Centre for Information Technology

Demographic Information:

University: _____

Faculty: _____

Status/ Designation: _____

Gender: Female [] Male []

Age category: 41-50 [] 51-60 [] 61-70 []

1. How would you describe the extent of adoption and use of electronic instructional media in teaching and learning in your university?

.....
.....
.....
.....

2. What has been the impact (relative advantage) of electronic instructional media in teaching and learning in your institution?

.....
.....
.....
.....

3. What facilitating conditions are available to support use of electronic instructional media in your institution?

.....
.....
.....
.....

4. What assessment methodologies are in place for evaluating the adoption and use of electronic instructional media into teaching and learning?

.....
.....
.....
.....
.....

5. What factors influence adoption and use of electronic instructional media by academics? Issues such as: (a) Compatibility,(b) individual belief/relative advantage, (c) ease of use of electronic instructional media, (d) social factors (e) image, (f) media literacy skills (g) technical

infrastructure (h) government policy, (i) institutional policy, (j) organisational support, (k) technical support and (l) culture (etcetera).

.....
.....
.....
.....

6. What are challenges are faced in the adoption and use of electronic instructional media by academics in selected Nigerian universities in your faculty/ institution? Issues such as (a) top management support (b) size of the student population (c) organisational readiness (d) time (e) Training on emerging technology (f) limited software and hardware (g) low bandwidth (h) support from subject librarians (i) institutional policy (j) technical support and (k) culture i.e suitability of technology to teaching and learning, funding, etcetera?

.....
.....
.....
.....

7. How do you think these challenges that are associated with adoption and use of electronic instructional media can be surmounted?

.....
.....
.....
.....

8. What capacity building arrangements are available to academics?

.....
.....
.....
.....

9. How would you describe the attitude of academics towards use of electronic instructional media in teaching and learning in your university?

.....
.....
.....
.....

10. What policies exist in your institution on adoption and use of electronic instructional media into teaching?

.....
.....
.....

11. Do you have budgetary allocation for acquisition and installation of electronic instruction media in your lecture rooms and faculty?

.....
.....
.....
.....

12. What role do you think the library should play in facilitating adoption and use of electronic instructional media in Nigerian universities?

.....
.....
.....
.....
.....
.....

13. What advice would you give to government and stakeholders in the education industry on the adoption and use of electronic instructional media in Nigerian universities?

.....
.....
.....
.....

Any other relevant remark

.....
.....
.....

Thank you

Appendix 3: Ethical Clearance



14 November 2014

Mrs Adefunke Glanile Abibi Z14580635
School of Social Sciences
Pietermaritzburg Campus

Protocol reference number: HSS/1484/D140
Project title: Adoption and Use of Electronic Instructional Media among Academics: Case study of selected universities in South West Nigeria

Dear Mrs Abibi

Expedited Approval

In response to your application dated 12 November 2014, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol here been granted **FULL APPROVAL**.

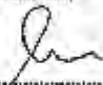
Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

Please note! Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully



Dr. Shanika Singh (Chair)

/s/

cc Supervisor: Professor Stephen Mtshali
cc Academic Leader Research: Professor Sabine Marshall
cc School Administrator: Ms Nancy Mudau

Humanities & Social Sciences Research Ethics Committee

Dr. SHANIKA SINGH (Chair)

Westville Campus, Govan Mbeki Building

Postal Address: Private Bag 354001, Durban 4000

Telephone: +27 (0) 31 260 3087/30307486/ Fax: +27 (0) 31 260 4939 Email: ethics@ukzn.ac.za / ethics@ukzn.ac.za / ethics@ukzn.ac.za

Website: www.ukzn.ac.za

1916 - 2016
100 YEARS OF ACADEMIC EXCELLENCE

CLIVE (0) 31 260 3087 Edgewood Howard College Medical School Pietermaritzburg Westville

Appendix 4: Informed Consent Letter for the Survey



30 September 2014

Dear Respondent,

Informed Consent Letter

Invitation to Participate in a Survey

I, Adefunke Olanike Alabi, a student at the University of KwaZulu-Natal, Pietermaritzburg Campus, South Africa wish to invite you to participate in a study entitled: **Adoption and use of electronic instructional media among academics in selected universities in South West Nigeria.**

The research study is undertaken as part of the requirements for PhD in Information Studies programme at the University of KwaZulu-Natal.

The aim of this study is to investigate adoption and use of Electronic Instructional Media among Academics in selected universities in South West Nigeria.

Participation is voluntary; you may refuse to participate or withdraw from the study at any point without having to explain your reasons for such withdrawal or non participation. There will be no monetary gain from participating in this research project. Both the researcher and the Information Studies Programme in the School of Social Sciences within the College of Humanities, University of KwaZulu-Natal will maintain confidentiality and anonymity of records identifying you as a participant.

It should take you about 15 minutes to complete the questionnaire. You are requested to kindly answer all questions to the best of your ability.

If you have any questions or concerns about participating in this study, please feel free to contact me or my supervisor by email or telephone.

Thank you for participating in this study.

Supervisor: Prof. Stephen Mutula,
Institution: University of KwaZulu-Natal, PMB
Telephone number: +27 712 750 109

Email address: Mutulas@ukzn.ac.za

Researcher: Mrs. Adefunke Olanike Alabi

Institution: University of KwaZulu-Natal, PMB

Cell: +27618591076

Email address: oladesh@yahoo.com / 214580635@stu.ukzn.ac.za
oladesh@yahoo.com

HSSREC Research Office: Ms P Ximba

Institution: University of KwaZulu-Natal

Telephone number: +27 (0) 31 260 3587

Email address: ximbap@ukzn.ac.za

I, hereby consent to participate in the study as outlined in the document about the study/ as explained to me by the researcher.

I acknowledge that I have been informed of the purpose of this survey. I am aware that participation in the study is voluntary and I may refuse to participate or withdraw from the study at any stage and for any reason without any form of disadvantage. I acknowledge that I understand the contents of this form and freely consented to participating in the study.

Participant

Signed..... Date:

Researcher

Signed Date:

Appendix 5: Informed Consent Letter for the Interview



30 September 2014

Dear Respondent,

Informed Consent Letter

INVITATION TO PARTICIPATE IN AN INTERVIEW

I, Adefunke Olanike Alabi, a PhD student at the University of KwaZulu-Natal, Pietermaritzburg Campus, South Africa wish to invite you to participate in an interview on a study entitled: “**Adoption and Use of Electronic Instructional Media among Academics in Universities in South West Nigeria**”

The aim of this study is to investigate adoption and use of Electronic Instructional Media among Academics in selected universities in South West Nigeria.

Both the researcher and the Information Studies Programme in the School of Social Sciences within the College of Humanities, University of KwaZulu-Natal will maintain confidentiality and anonymity of records identifying you as a participant.

It should take about 35 minutes to complete the interview. You are requested to kindly answer all questions to the best of your ability.

If you have any questions or concerns about participating in this study, please feel free to contact me or my supervisor by email or telephone.

Thank you for participating in this study.

Supervisor: Prof. Stephen Mutula

Institution: University of KwaZulu-Natal, PMB

Telephone number: +27 (0) 33 260 5571

Email address: Mutulas@ukzn.ac.za

HSSREC Research Office: Ms P Ximba
Institution: University of KwaZulu-Natal
Telephone number: +27 (0) 31 260 3587
Email address: ximbap@ukzn.ac.za

Researcher: Mrs. Adefunke Olanike Alabi
Institution: University of KwaZulu-Natal, PMB
Cell: +27618591076
Email address: oladesh@yahoo.com / 214580635@stu.ukzn.ac.za

Signed Date:

I..... (Full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT

DATE

.....

Appendix 6: Request for Permission (UI)



School of Social Sciences
University of KwaZulu-Natal
Private Bag X01, Scottsville
3209
South Africa

10th May, 2014

The Deputy Vice Chancellor (Academic),
University of Ibadan
Ibadan
Oyo State
Nigeria
Dear Sir,

Request for Permission to access your Academic staff in Faculties of Science, Technology and Arts to collect data for PhD Research

I, Adefunke Olanike Alabi, a doctoral student of Information Studies, School of Social Sciences, University of Kwa-Zulu Natal, UKZN, South Africa writes to solicit for your approval to access Academic staff in the Faculty of Science, Arts and Technology. The aim of this study is to investigate “**Adoption and Use of Electronic Instructional Media among Academics in selected Universities in South West Nigeria**”. The questionnaire is to be completed by selected academics in your institution. Any faculty who wishes to refrain from participating in the survey is obliged to do so. Permission is also sought to conduct an in-depth interview with the Deans, University Librarian and Director, Centre for Information Technology in your institution on adoption and use of electronic instructional media in teaching and learning.

The purpose of this letter is to request for your permission to carry out the research in your university. Should need further clarification concerning this study, kindly direct your further enquiries concerning this study to my supervisor, Prof. Stephen Mutula, (telephone +2773326055, email: Mutulas@ukzn.ac.za).

Thank you for your anticipated cooperation.

A Alabi

Adefunke Olanike Alabi

Appendix 7: Approval to Carry Out Research (UI)



A. Idowu OLAYINKA
CGeol, EurGeol, COMEG Regd, FGS, FNMGS, FAS
BSc (Ibadan), MSc (London), PhD (Birmingham), DIC
Professor of Geophysics

UNIVERSITY OF IBADAN IBADAN, NIGERIA

OFFICE OF THE DEPUTY VICE-CHANCELLOR (ACADEMIC)

GSM: +234 (0) 802 290 3156
+234 (0) 803 064 3124

E-mail: aiolayinka@yahoo.com,
idowu.olayinka@ui.edu.ng
<http://www.idowuolayinka.org>

23 July, 2014

TO WHOM IT MAY CONCERN

Re: Permission To Carry Out Research : Adefunke Olanike ALABI (Mrs)

I write in response to a letter dated 11 July, 2014 and addressed to the Deputy Vice-Chancellor (Academic), University of Ibadan on the above issue. The letter seeks an approval for the above named Ph.D candidate from the University of KwaZulu Natal, South Africa to be permitted to carry out aspects of her Ph.D research in our University.

It is noted that Mrs. Alabi's research, titled "**Adoption and use of Electronic Instructional Media among Academics: Case study of Selected Universities in South West Nigeria**" is quite topical and her findings will be found relevant to our University setting. I therefore convey our University's support for her to conduct activities related to this research on our campus.

Sincerely,

Professor Idowu Olayinka
Deputy Vice-Chancellor (Academic)

Our Vision:

To be a world-class institution for academic excellence geared towards meeting societal needs.

Our Mission:

- To expand the frontiers of knowledge through provision of excellent conditions for learning and research.
- To produce graduates who are worthy in character and sound judgement.
- To contribute to the transformation of society through creativity and innovation.
- To serve as a dynamic custodian of society's salutary values and thus sustain its integrity.

Appendix 8: Request for Permission (CU)



School of Social Sciences
University of KwaZulu-Natal
Private Bag X01, Scottsville
3209
South Africa

10th May, 2014

The Registrar
Covenant University
Sango
Ogun State
Nigeria

Dear Sir,

Request for Permission to access your Academic staff in Faculties of Science, Engineering and Leadership Development to Collect Data for PhD Research

L_Adefunke Olanike Alabi, a doctoral student of Information Studies, School of Social Sciences, University of Kwa-Zulu Natal, UKZN, South Africa writes to solicit for your approval to access Academic staff in the School of Natural and Applied Sciences, Engineering and Technology and School of Leadership Development. The aim of this study is to investigate “**Adoption and Use of Electronic Instructional Media among Academics in selected Universities in South West Nigeria**”. The questionnaire is to be completed by selected academics in your institution. Any faculty who wishes to refrain from participating in the survey is obliged to do so. Permission is also sought to conduct an in-depth interview with the Deans, University Librarian and Director, Centre for Information Technology in your institution on adoption and use of electronic instructional media in teaching and learning.

The purpose of this letter is to request for your permission to carry out the research in your university. Should need further clarification concerning this study, kindly direct your further enquiries concerning this study to my supervisor, Prof. Stephen Mutula, (telephone +2773326055, email: Mutulas@ukzn.ac.za).

Thank you for your anticipated cooperation.



Adefunke Olanike Alabi

Appendix 9: Approval to Carry Out Research (CU)

Covenant University
Canaanland, Km 10, Idiroko Road, Ota, Ogun State, Nigeria.
Tel: +234-8115762473, 08171613173, 07066553463
E-mail: registrar@covenantuniversity.edu.ng
Website: www.covenantuniversity.edu.ng

 **OFFICE OF THE REGISTRAR**
Dr. Olumuyiwa A. Oludayo

10th September, 2014

Mrs. Alabi Olanike Adefunke,
University of KwaZulu Natal,
South Africa.

Dear *Mrs. Alabi*,

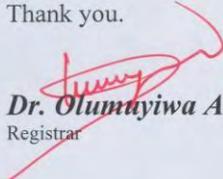
**RE: INTRODUCING ADEFUNKE OLANIKE ALABI (MRS.) Ph.D STUDENT AT
UNIVERSITY OF KWAZULU NATAL**

I write to acknowledge your letter and convey management's approval of your request to conduct a field research in Covenant University, Ota for your Ph.D thesis titled: *"Adoption and Use of Electronic Instructional Media among Academics: Case Study of Selected University in South West, Nigeria"*

You can take advantage of our academic environment to administer your questionnaire and harvest other necessary information you might need for your research. Please link up with Mr. David Obaoye of the Establishment office.

I wish you most refreshing time in Covenant University.

Thank you.


Dr. Olumuyiwa A. Oludayo
Registrar

Vice-Chancellor: Professor Charles K. Ayo
Registrar: Dr. Olumuyiwa A. Oludayo

Raising A New Generation of Leaders

Appendix 10: Purpose of Use of Electronic Instructional Media among Academics in Nigerian Universities (N=215)

Hardware	CS	CC	LS	LP	CW	PAC	AOR	BL	IVT	DA	PR	OLD	PL	SA	ST	OF	TC
	Freq. (%)	Freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)
Personal Computer	122 (56.7)	115 (53.5)	140 (65.1)	149 (69.3)	53 (24.7)	130 (60.5)	137 (63.7)	34 (15.8)	50 (23.3)	108 (50.2)	113 (52.6)	70 (32.6)	55 (25.6)	56 (26.0)	78 (36.3)	25 (11.6)	25 (11.6)
Multimedia Projector	60 (27.9)	31 (14.4)	136 (63.3)	16 (7.4)	6 (2.8)	11 (5.1)	10 (4.7)	3 (1.4)	33 (15.3)	7 (3.3)	6 (2.8)	11 (5.1)	4 (1.9)	2 (0.9)	6 (2.8)	4 (1.9)	5 (2.3)
Scanner	14 (6.5)	14 (6.5)	18 (8.4)	55 (25.6)	21 (9.8)	45 (20.9)	5 (2.3)	2 (0.9)	6 (2.8)	3 (1.4)	8 (3.7)	3 (1.4)	4 (1.9)	4 (1.9)	5 (2.3)	3 (1.4)	3 (1.4)
Digital Camera	11 (5.1)	10 (4.7)	17 (7.9)	26 (12.1)	15 (7.0)	33 (15.3)	4 (1.9)	3 (1.4)	8 (3.7)	3 (1.4)	3 (1.4)	3 (1.4)	1 (0.5)	1 (0.5)	2 (0.9)	2 (0.9)	6 (2.8)
Printer	24 (11.2)	22 (10.2)	25 (11.6)	58 (27.0)	11 (5.1)	81 (37.7)	5 (2.3)	1 (0.5)	4 (1.9)	7 (3.3)	29 (13.5)	5 (2.3)	3 (1.4)	3 (1.4)	10 (4.7)	3 (1.4)	3 (1.4)
Smart Phones	80 (37.2)	91 (42.3)	9 (4.2)	28 (13.0)	9 (4.2)	9 (4.2)	44 (20.5)	6 (2.8)	5 (2.3)	2 (0.9)	2 (0.9)	11 (5.1)	2 (0.9)	3 (1.4)	4 (1.9)	5 (2.3)	4 (1.9)
Ipad, Tablet	61 (28.4)	65 (30.2)	32 (14.9)	49 (22.8)	11 (5.1)	22 (10.2)	50 (23.3)	9 (4.2)	11 (5.1)	7 (3.3)	6 (2.8)	16 (7.4)	5 (2.3)	5 (2.3)	5 (2.3)	4 (1.9)	6 (2.8)
CD / DVD	15 (7.0)	8 (3.7)	19 (8.8)	18 (8.4)	7 (3.3)	34 (15.8)	6 (2.8)	2 (0.9)	7 (3.3)	5 (2.3)	4 (1.9)	2 (0.9)	2 (0.9)	8 (3.7)	15 (7.0)	2 (0.9)	2 (0.9)
Interactive board	66 (30.7)	30 (14.0)	74 (34.4)	19 (8.8)	16 (7.4)	17 (7.9)	17 (7.9)	3 (1.4)	27 (12.6)	4 (1.9)	5 (2.3)	8 (3.7)	2 (0.9)	-	1 (0.5)	3 (1.4)	1 (0.5)

Key: CS: communication with students; CC: communication with colleagues; LS: lecture presentation ; LP: lecture preparation; CW: creating course website; PAC: producing assignment/course manuals; AOR: accessing online teaching resources; BL: blogging; IVT: interactive teaching; DA: data analysis; PR: processing student results; OLD: online learning/discussion; PL: checking students plagiarism; SA: = students to turn in assignments; ST: = students' submission of research essays; OF: Creating online forum for my students; TC: teleconferencing/videoconferencing

**Appendix 10: Purpose of Use of Electronic Instructional Media among Academics in Nigerian Universities
(CONTD.) (N=215)**

Software	CS	CC	LS	LP	CW	PAC	AOR	BL	IVT	DA	PR	OLD	PL	SA	ST	OF	TC
	Freq. (%)																
MSWord	79 (36.7)	65 (30.2)	80 (37.2)	111 (51.6)	27 (12.6)	86 (40.0)	16 (7.4)	4 (1.9)	17 (7.9)	23 (10.7)	39 (18.1)	8 (3.7)	10 (4.7)	14 (6.5)	25 (11.6)	5 (2.3)	1 (0.5)
Power Point	73 (34.0)	51 (23.7)	123 (57.2)	72 (33.5)	14 (6.5)	45 (20.9)	12 (5.6)	7 (3.3)	19 (8.8)	13 (6.0)	10 (4.7)	5 (2.3)	5 (2.3)	3 (1.4)	6 (2.8)	2 (0.9)	1 (0.5)
Excel	29 (13.5)	24 (11.2)	26 (12.1)	23 (10.7)	11 (5.1)	21 (9.8)	8 (3.7)	3 (1.4)	12 (5.6)	73 (34.0)	74 (34.4)	9 (4.2)	4 (1.9)	4 (1.9)	7 (3.3)	2 (0.9)	1 (0.5)
LMS	49 (22.8)	30 (14.0)	33 (15.3)	24 (11.2)	17 (7.9)	34 (15.8)	14 (6.5)	4 (1.9)	24 (11.2)	6 (2.8)	7 (3.3)	15 (7.0)	11 (5.1)	10 (4.7)	11 (5.1)	14 (6.5)	1 (0.5)
Turni tin	12 (5.6)	9 (4.2)	5 (2.3)	4 (1.9)	1 (0.5)	4 (1.9)	3 (1.4)	1 (0.5)	1 (0.5)	3 (1.4)	4 (1.9)	7 (3.3)	71 (33.0)	16 (7.4)	22 (10.2)	3 (1.4)	2 (0.9)

Key: CS: communication with students; CC: communication with colleagues; LS: lecture presentation ; LP: lecture preparation; CW: creating course website; PAC: producing assignment/course manuals; AOR: accessing online teaching resources; BL: blogging; IVT: interactive teaching; DA: data analysis; PR: processing student results; OLD: online learning/discussion; PL: checking students plagiarism; SA: = students to turn in assignments; ST students' submission of research essays; OF: Creating online forum for my students; TC: teleconferencing/videoconferencing

**Appendix 10: Purpose of Use of Electronic Instructional Media among Academics in Nigerian Universities
(CONTD.) (N=215)**

e-resources	CS	CC	LS	LP	CW	PAC	AOR	BL	IVT	DA	PR	OLD	PL	SA	ST	OF	TC
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
Internet	102 (47.4)	103 (47.9)	50 (23.3)	101 (47.0)	45 (20.9)	68 (31.6)	101 (47.0)	28 (13.0)	29 (13.5)	30 (14.0)	30 (14.0)	50 (23.3)	41 (19.1)	25 (11.6)	36 (16.7)	22 (10.2)	22 (10.2)
E-mail	128 (59.5)	146 (67.9)	15 (7.0)	16 (7.4)	7 (3.3)	19 (8.8)	24 (11.2)	4 (1.9)	8 (3.7)	7 (3.3)	11 (5.1)	13 (6.0)	7 (3.3)	17 (7.9)	27 (12.6)	10 (4.7)	2 (0.9)
Web resources	35 (16.3)	33 (15.3)	33 (15.3)	89 (41.4)	32 (14.9)	54 (25.1)	57 (26.5)	12 (5.6)	20 (9.3)	11 (5.1)	10 (4.7)	15 (7.0)	13 (6.0)	8 (3.7)	10 (4.7)	12 (5.6)	6 (2.8)
Electronic Databases	22 (10.2)	20 (9.3)	21 (9.8)	80 (37.2)	25 (11.6)	33 (15.3)	37 (17.2)	4 (1.9)	9 (4.2)	14 (6.5)	9 (4.2)	11 (5.1)	8 (3.7)	4 (1.9)	6 (2.8)	2 (0.9)	
e-books	29 (13.5)	23 (10.7)	23 (10.7)	118 (54.9)	17 (7.9)	59 (27.4)	37 (17.2)	5 (2.3)	8 (3.7)	6 (2.8)	2 (0.9)	6 (2.8)	7 (3.3)	3 (1.4)	4 (1.9)	1 (0.5)	
e- journals	26 (12.1)	23 (10.7)	20 (9.3)	108 (50.2)	17 (7.9)	58 (27.0)	39 (18.1)	4 (1.9)	8 (3.7)	8 (3.7)	3 (1.4)	8 (3.7)	6 (2.8)	2 (0.9)	4 (1.9)	2 (0.9)	

Key: CS: communication with students; CC: communication with colleagues; LS: lecture presentation ; LP: lecture preparation; CW: creating course website; PAC: producing assignment/course manuals; AOR: accessing online teaching resources; BL: blogging; IVT: interactive teaching; DA: data analysis; PR: processing student results; OLD: online learning/discussion; PL: checking students plagiarism; SA: = students to turn in assignments; ST: = students' submission of research essays; OF: Creating online forum for my students; TC: teleconferencing/videoconferencing

**Appendix 10: Purpose of Use of Electronic Instructional Media among Academics in Nigerian Universities
(CONTD.) (N=215)**

Social networking sites	CS	CC	LS	LP	CW	PAC	AOR	BL	IVT	DA	PR	OLD	PL	SA	ST	OF	TC
	Freq. (%)																
Facebook	61 (28.4)	76 (35.3)	12 (5.6)	7 (3.3)	11 (5.1)	8 (3.7)	7 (3.3)	3 (1.4)	5 (2.3)			7 (3.3)	1 (0.5)	1 (0.5)	1 (0.5)	7 (3.3)	2 (0.9)
Twitter	32 (14.9)	37 (17.2)	4 (1.9)	8 (3.7)	6 (2.8)	5 (2.3)	4 (1.9)	1 (0.5)	3 (1.4)		2 (0.9)	6 (2.8)	1 (0.5)	1 (0.5)	1 (0.5)	4 (1.9)	1 (0.5)
Wikis	21 (9.8)	21 (9.8)	7 (3.3)	22 (10.2)	15 (7.0)	14 (6.5)	16 (7.4)	2 (0.9)	6 (2.8)	1 (0.5)		4 (1.9)	2 (0.9)	1 (0.5)	1 (0.5)	1 (0.5)	
Blog	16 (7.4)	16 (7.4)	6 (2.8)	12 (5.6)	6 (2.8)	8 (3.7)	10 (4.7)	12 (5.6)	3 (1.4)	2 (0.9)		2 (0.9)			1 (0.5)	2 (0.9)	
You tube	20 (9.3)	18 (8.4)	19 (8.8)	34 (15.8)	12 (5.6)	18 (8.4)	22 (10.2)	2 (0.9)	10 (4.7)	1 (0.5)		9 (4.2)	2 (0.9)	1 (0.5)		4 (1.9)	2 (0.9)

Source: Researcher's survey data output (2015)

Key: CS: communication with students; CC: communication with colleagues; LS: lecture presentation ; LP: lecture preparation; CW: creating course website; PAC: producing assignment/course manuals; AOR: accessing online teaching resources; BL: blogging; IVT: interactive teaching; DA: data analysis; PR: processing student results; OLD: online learning/discussion; PL: checking students plagiarism; SA: students to turn in assignments; ST: students' submission of research essays; OF: Creating online forum for my students; TC: teleconferencing/videoconferencing

Appendix 11: Editor's Report

72 A Christie Road
Pelham
3201
Pictoumaritbusq
4 Dec. 2015

Mrs. Adejoke Olanike Mabi
Information Studies
School of Social Sciences

CERTIFICATION OF EDITING

This is to certify that his PhD thesis has been thoroughly edited for correct English usage. Spelling, punctuation & syntax have been scrutinized & corrected where necessary.

On the few occasions when the candidate's meaning was not clear, I have made marginal notations to that effect.

The ms did not require any major editorial intervention. Errors were minor & easily modified.

Yours faithfully

UR Jones
DR A.R. Jones

Appendix 12: Item Total Correlation

Total Statistics on Types of Electronic Instructional Media

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Personal Computer	74.25	294.205	.827	.938
multimedia projector	75.33	285.333	.682	.937
Scanner	75.67	267.697	.929	.933
Digital camera	75.58	267.720	.909	.933
Printer	75.50	274.273	.833	.934
mobile phones(smart phone)	74.50	286.273	.524	.939
mobile devices such as ipads, notebooks,tablet	74.42	287.720	.517	.939
CD/DVD	76.08	260.811	.847	.934
interactive white board	76.25	274.932	.614	.938
Microsoft office Word	74.00	304.727	.126	.943
presentation software such as powerpoint	74.75	292.205	.561	.939
Spreadsheets	75.67	273.333	.747	.936
Learning management software	76.50	288.818	.404	.941
turnitin (plagiarism software)	76.58	286.811	.614	.938
Internet	73.92	299.902	.453	.940
E-mail	75.58	264.811	.848	.934
web resources	75.75	282.023	.746	.936
electronic databases	74.92	296.992	.477	.940
e-books	74.83	297.424	.653	.939
e- journals	74.83	296.333	.544	.939
Facebook	75.92	273.902	.759	.936
Twitter	75.50	279.909	.607	.938
Wikis	74.92	264.811	.848	.805
Blog	75.58	274.273	.477	.940
You Tube	76.17	290.152	.367	.942

Item-Total Statistics on Extent of Adoption and use of Electronic Instructional Media

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
I have made changes to accommodate electronic instructional media in my lectures	28.74	70.430	.597	.732	.918
I regularly pursue innovative ways to incorporate electronic instructional media into my lectures	29.11	64.872	.825	.838	.904
I give my students course materials in electronic formats	29.33	61.462	.847	.815	.901
I recommend and direct my students to reading lists in databases, internet and e-books	29.15	64.516	.689	.665	.913
i have created e mail accounts and online groups for my students to communicate with me and other members of the class	29.67	66.385	.642	.629	.916
I have created online groups to facilitate teaching, delivery of course content and discussion among my students	28.81	71.695	.513	.587	.922
I design my courses in such a way that my students can use electronic instructional media for their own individual learning/study	29.30	61.678	.818	.781	.903
I incorporate electronic media in my teaching to such an extent that it has become a standard learning tool for my students	29.63	62.704	.791	.841	.905
I incorporate electronic instructional media in my teaching to such an extent that my students can collaborate with other students in my class and outside lecture room for a mastery of the course	29.67	64.615	.715	.787	.911

Factors Influencing Adoption and Use of Electronic Instructional Media

Item-Total Statistics on Performance Expectancy

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
electronic instructional media are useful in my lectures	25.32	16.393	.822	.866	.873
electronic instructional media enable me to accomplish tasks more quickly	25.48	16.760	.884	.937	.868
electronic instructional media usage enhances my teaching in terms of content and delivery	25.48	17.177	.886	.915	.870
using electronic instructional media would make it easier to do my job	25.44	17.007	.916	.973	.867
electronic instructional media usage improve my productivity	25.52	15.427	.927	.981	.859
electronic instructional media usage provide me access to internet	25.48	16.177	.854	.881	.869
electronic instructional media usage provide me access to up to date resources the courses I teach	26.80	20.833	.078	.192	.973

Item-Total Statistics on Effort Expectancy

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
electronic instructional media are easy to use	25.64	18.073	.612	.770	.637
the use of electronic instructional media do not require a lot of effort	26.04	13.790	.855	.793	.545
my interaction with electronic instructional media(both hardware and software)would be clear and understandable	25.44	20.757	.370	.332	.689
it is easy to use electronic instructional media	25.72	16.960	.778	.929	.601
using electronic instructional media is not frustrating	25.80	16.500	.778	.932	.595
learning how to interact with or use the electronic instructional media is easy for me	25.36	21.323	.373	.644	.691
The use of electronic instructional media require high level media/digital literacy skills	26.36	21.907	.033	.455	.779

Item-Total Statistics on Social Influence

	<i>Scale Mean if Item Deleted</i>	<i>Scale Variance if Item Deleted</i>	<i>Corrected Item-Total Correlation</i>	<i>Squared Multiple Correlation</i>	<i>Cronbach's Alpha if Item Deleted</i>
people who are important to me (such as dean, HOD, students , colleagues, etc) think i should use electronic instructional media in my teaching	16.07	18.958	.330	.350	.701
my students particularly think i should use electronic instructional media	15.89	18.914	.515	.343	.655
using electronic instructional media is a status symbol in my institution	17.64	19.127	.363	.207	.690
electronic instructional media usage improves my prestige/ image among my students	16.57	14.698	.585	.756	.614
electronic instructional media usage improves my prestige/image among my colleagues	16.86	13.608	.736	.766	.549

Item-Total Statistics on Facilitating Conditions

	<i>Scale Mean if Item Deleted</i>	<i>Scale Variance if Item Deleted</i>	<i>Corrected Item-Total Correlation</i>	<i>Squared Multiple Correlation</i>	<i>Cronbach's Alpha if Item Deleted</i>
Instructional technologists/person are available to provide assistance with difficulty on use of electronic instructional media	9.71	6.286	.648	.428	.607
There is access to the internet in lecture rooms and connectivity is very fast and reliable	10.25	7.898	.524	.318	.683
My institution has made provision for uninterruptible power supply	8.61	9.062	.539	.293	.688
my institution has available the resources (adequate computers and internet connectivity for students in the department/faculty)	9.57	8.254	.456	.229	.722
my institution has available space (lecture rooms or dedicated computer laboratories with internet access for students in the department/faculty)	15.54	21.813	.138	.097	.742
There are plug-ins for unlimited number of computers in lecture rooms	8.01	8.875	.423	.243	.628

Item Total statistics on Compatibility

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
electronic instructional media is appropriate for teaching my courses	14.53	9.568	-.219	.970	.265
it bothers me to use electronic instructional media when I could do my teaching without them	16.97	6.861	.187	.547	.554 ^a
I do not need electronic instructional media in my work	17.07	6.685	.361	.594	.563 ^a
electronic instructional media usage in teaching makes lectures redundant	17.20	7.545	.284	.428	.655 ^a
I worry about the privacy of my information when using electronic instructional media	16.33	7.057	.003	.601	.629
I worry that electronic instructional media are not secure enough to protect my personal information, intellectual content or right	16.20	6.717	.092	.498	.624

Item-Total Statistics on Trialability

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
it is easy to use electronic instructional media more frequently after trying them out	19.17	11.799	.726	.771	.663
a trial convinced me that using electronic instructional media is better than traditional systems of teaching	19.23	11.151	.674	.865	.670
I do not need a trial to be convinced which electronic instructional media are the best for me	19.83	13.178	.344	.450	.771
it did not take me much time to try electronic instructional media before i finally accepted their use	19.50	10.190	.792	.798	.627
it is better to experiment with electronic instructional media before adopting and using them	19.43	16.116	.093	.117	.810

Item-Total Statistics on Observability

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
I was influenced by what I observed as the benefits of using electronic instructional media	11.40	5.283	.687	.546	.589
I observed others using electronic instructional media and saw the advantages of doing so	11.47	5.568	.737	.670	.586
observing other colleagues of mine on how to use electronic instructional media before i can use them is unnecessary	12.17	6.075	.232	.088	.866
I have seen how my colleagues use electronic instructional media before I could use them	11.77	4.806	.606	.609	.621
it did not take me much time to try electronic instructional media before i finally accepted their use	19.50	10.190	.792	.798	.627
I have the opportunity to try out how I can make use of electronic instructional media in my teaching	19.33	14.437	.443	.344	.739

Item-Total Statistics on Behavioural Intention

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
I will use electronic instructional media for teaching my students on a regular basis	12.83	5.868	.838	.907	.802
I will use electronic instructional media for my teaching at present more frequently	12.80	5.821	.887	.911	.783
I will strongly recommend other academics to use electronic instructional media for their teaching purposes	12.67	5.885	.884	.829	.785
In future, I intend to use electronic instructional media because of the benefits	12.50	5.871	.880	.825	.794
I intend to use electronic instructional media because it is appropriate for my working style	10.67	5.897	.884	.829	.872
I will keep using electronic instructional media based on my observation in my faculty/department	12.90	7.610	.400	.258	.967

Item-Total Statistics on Media Literacy Skills

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
use different types of electronic instructional media (such as computer, multimedia projector, scanner, presentation software, MOODLE, e-books, etc) in my teaching endeavours	45.29	50.063	.647	.894	.705
use the internet to search for relevant resources for my lectures	44.79	54.693	.700	.893	.643
develop search strategies using keywords and Boolean terms to locate information on the internet from one or more sources for my lectures	45.36	52.460	.656	.892	.621
identify the electronic resources appropriate to prepare for my lecture	44.96	56.184	.683	.895	.688
download files from the internet	44.86	54.349	.731	.891	.706
upload file on the internet	45.18	53.930	.569	.897	.795
save files from a web page	45.18	50.745	.880	.882	.703
send attachments with e-mail messages	45.07	50.735	.891	.882	.542
use web 2.0 tools/technologies (e.g Facebook, Twitter, Wikis, Skype etc)	45.50	58.333	.181	.917	.578
design course content using electronic instructional media to facilitate mastery of the subject	45.93	52.069	.567	.898	.614
communicate with my students effectively using electronic instructional media	45.21	49.952	.764	.886	.655
take part in online discussion	45.61	50.396	.592	.898	.543

Item-Total Statistics on Challenges of Adoption and Use of Electronic Instructional Media

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Lack of top management support	70.67	204.606	.492	.916
Lack of fund	70.58	198.992	.743	.912
Lack of training on use of emerging technologies for teaching and learning	70.25	209.295	.309	.920
Inadequate support from internal IT staff	70.42	203.538	.550	.915
Limited access to electronic instructional media	70.17	201.970	.689	.913
Inadequate budgetary allocation for acquisition and installation of electronic instructional media	70.42	200.629	.841	.912
Poor culture of using technology for teaching	70.17	203.061	.644	.914
Low bandwidth	70.42	205.356	.483	.917
Lack of institutional policy on electronic instructional media adoption and use	70.00	198.545	.600	.914
Lack of training	70.42	207.720	.330	.920
Too much workload of academics	69.92	193.720	.721	.911
ICT anxiety among academics	70.50	198.091	.638	.913
Limited availability of software and hardware	69.92	193.356	.732	.911
Poor and Unreliable Internet access	70.17	186.879	.725	.911
Lack of support from subject/faculty librarians	70.75	196.023	.651	.913
The student population is too large	70.67	192.970	.586	.915
Lack of technical support	70.17	197.606	.653	.913
Unreliable power supply	69.42	202.629	.652	.914
Time	70.50	200.273	.527	.916
Lack of top management support	70.50	188.818	.782	.910
Lack of fund	72.75	218.205	.219	.920
Lack of training on use of emerging technologies for teaching and learning	71.75	227.841	-.347	.928