DETERMINANTS OF LECTURERS' ACCEPTANCE, USE, AND ATTITUDE TOWARDS OPEN EDUCATIONAL RESOURCES FOR KNOWLEDGE SHARING IN UNIVERSITIES IN NORTH-EAST, NIGERIA

BY

BELLO, Ahmed
PhD/SSTE/2018/FT/1112

DEPARTMENT OF EDUCATIONAL TECHNOLOGY,
FEDERAL UNIVERSITY OF TECHNOLOGY
MINNA

JUNE, 2023

ABSTRACT

The study investigated the determinants of lecturers' acceptance, use, and attitude towards open educational resources for knowledge sharing in universities in North-East Nigeria. The population of the study was 632 lecturers drawn from Federal Universities of North-East Nigeria. The sample of the study comprised of 338 lecturers purposively selected from the three Federal Universities; Adamawa, Bauchi and Borno State, Nigeria. The study adopted concurrent embedded mixed method research design in which eight quantitative and two qualitative (QUAN + qual) research questions guided the study with eight null hypotheses. The instruments used for data collection were closed ended questionnaire and focus group interview protocol. The instruments were validated by experts and subjected to reliability test using Cronbach's alpha and a reliability coefficient of .956 was obtained. For the focus group interview protocol, Cohen's $\kappa = .611$ and .688 was obtained for lecturers' attitude toward knowledge sharing and the use of shared OER. The data was analysed using simple percentages (%), mean (x) and standard deviation (SD) for quantitative data. While thematic analysis was used for qualitative data using Atlas ti. Version 9.0. Similarly, sequential multiple linear regression analysis was used to test the hypotheses at 0.05 level of significance using SPSS version 23.0. The findings revealed that performance expectancy .432, effort expectancy .456, social influence .497, and facilitating conditions .499 collectively influence lecturers' acceptance to share OER and use of shared OER. Similarly, the constructs collectively influence lecturers' attitudes toward knowledge sharing on OER repository and use of shared OER. The findings of the regression coefficient of PE ($\beta = 0.658$; $t = 16.001$; $p = 0.000$), EE ($\beta = 0.194$; $t = 3.802$; $p = 0.000$), SI ($\beta = 0.306$; $t = 5.246$; $p = 0.000$), are positively and significantly correlated with the criterion; acceptance to share OER. While ($\beta = .053$; $t = .899$; $p = 0.369$), indicating that facilitating conditions does not have a predictive capacity to stimulate lecturer's acceptance to share their resources on OER repository. The study recommends among others that the university management should consider adjusting OER policy to accommodate lecturers career progression to include promotion, book development, courseware development project and special award for community service in order to sustain OER activities in North-East universities.

TABLE OF CONTENTS

Content		Page
Cover page		i
Title Page		ii
Declaration		iii
Certification		iv
Dedication		v
Acknowledgements		vi
Abstract		viii
Table of Contents		ix
List of Tables		xiii
List of Figures		xv
List of Appendices		xvii
Abbreviations		xviii
CHAPTER ONE		
1.0	**INTRODUCTION**	1
1.1	Background to the Study	1
1.2	Statement of the Research Problem	10
1.3	Aim and Objectives of the Study	12
1.4	Research Questions	13
1.5	Research Hypotheses	14
1.6	Significance of the Study	15
1.7	Scope of the Study	18
1.8	Operational Definition of Terms	19

CHAPTER TWO

2.0	**REVIEW OF RELATED LITERATURE**	20
2.1	Conceptual Framework	20
2.1.1	Information and Communication Technology (ICT)	22
2.1.2	Concept of Open and Distance Learning (ODL)	24
2.1.3	Open Source Software (OSS)	28
2.1.4	Open content sharing	31
2.1.5	Open licence	33
2.1.6	Open Educational Resources (OER)	37
2.1.7	Nigerian university commission (NUC)	42
2.1.8	OER in Nigerian Universities	44
2.1.9a	OER creation cycle	45
2.1.9b	OER sharing choices	47
2.1.9c	OER search strategies	48
2.1.9d	Structure of OER management system	49
2.1.10	University lecturers' roles	52
2.1.11	Lecturers' acceptance of OER	54
2.1.12	Lecturers' use of OER	56
2.1.13	Lecturers' attitude toward OER for knowledge sharing	58
2.2	Theoretical Framework	60
2.3	Empirical Studies	66
2.3.1	Empirical studies on lecturers' acceptance of OER	66
2.3.2	Empirical studies on lecturers' use of OER	73
2.3.3	Empirical studies on lecturers' attitude toward OER for knowledge sharing	77

2.4 Summary of Literature Reviewed 80

CHAPTER THREE

3.0 RESEARCH METHODOLOGY 83

3.1 Research Design 83

3.3 Population of the Study 86

3.4 Sample and Sampling Technique 87

3.5 Research Instruments 87

3.5.1 Development of the research instruments 88

3.6 Validation of Research Instruments 89

3.7 Reliability of Research Instruments 90

3.8 Method of Data Collection 92

3.9 Method of Data Analysis 94

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION 96

4.1 Demographic Data 96

4.2 Answering Research Questions for Quantitative Data (Phase Ia) 99

4.3 Answering Research Questions for Qualitative Data (Phase IIa) 106

4.4 Answering Research Questions for Quantitative Data (Phase Ib) 118

4.5 Answering Research Questions for Qualitative Data (Phase IIb) 125

4.6 Testing Null Hypotheses 139

4.7 Discussion of Findings on Acceptance to Share OER 154

4.8 Discussion of Findings on Use of Shared OER 162

CHAPTER FIVE

5.0	**CONCLUSION AND RECOMMENDATIONS**	172
5.1	Conclusion	172
5.2	Recommendations	177
5.3	Contributions to Knowledge	180
5.4	Limitation of the Study	181
5.5	Suggestions for Further Studies	182
References		184
Appendices		192

LIST OF TABLES

Table		Page
3.1	Strategic Plan and Time Frame for the Research Study	93
4.1	Frequency and percentages of demographic data of respondents	97
4.2	Mean and standard deviations of respondents on the influence of performance expectancy on lecturers' acceptance to share OER	100
4.3	Mean and standard deviations of respondents on the influence of effort expectancy on lecturers' acceptance to share OER	101
4.4	Mean and standard deviations of respondents on the impact of social influence on lecturers' acceptance to share OER	103
4.5	Mean and standard deviations of respondents on the influence of facilitating conditions on lecturers' acceptance to share OER	105
4.6a	Thematic analysis and description of emerging themes for performance expectancy	108
4.6b	Thematic analysis and description of emerging themes for effort expectancy	110
4.6c	Thematic analysis and description of emerging themes for social influence construct	112
4.6d	Thematic analysis and description of emerging themes for facilitating conditions	114
4.7	Mean and standard deviations of respondents on the influence of performance expectancy on lecturers' use of OER	119
4.8	Mean and standard deviations of respondents on the influence of effort expectancy on lecturers' use of OER	120
4.9	Mean and standard deviations of respondents on the impact of social influence on lecturers use of OER	122
4.10	Mean and standard deviations of respondents on the influence of facilitating conditions on lecturers' use of OER	123
4.11a	Thematic analysis and description of emerging themes for performance expectancy	126
4.11b	Thematic analysis and description of emerging themes for effort expectancy	128

4.11c	Thematic analysis and description of emerging themes for performance expectancy	133
4.11d	Thematic analysis and description of emerging themes for facilitating conditions	136
4.12	Model Summary	140
4.13	Analysis of Variance (ANOVA): Testing for overall model fitness	141
4.14	Regression coefficient for the constructs	142
4.15	Analysis of Variance (ANOVA): Testing for overall model fitness	143
4.16	Analysis of Variance (ANOVA): Testing for overall model fitness	144
4.17	Analysis of Variance (ANOVA): Testing for overall model fitness	146
4.18	Model Summary	147
4.19	Analysis of Variance (ANOVA): Testing for overall model fitness	148
4.20	Regression coefficient for the constructs	149
4.21	Analysis of Variance (ANOVA): Testing for overall model fitness	150
4.22	Analysis of Variance (ANOVA): Testing for overall model fitness	152
4.23	Analysis of Variance (ANOVA): Testing for overall model fitness	153

LIST OF FIGURES

Figure		Page
2.1	Conceptual Framework	20
2.2	Creative Common Licence Conditions 1	36
2.3	Creative Common Licence Conditions 2	37
2.4	Types of Open Educational Resources	40
2.5	OER Creation Cycle	46
2.6	The Structure of OER Management System	50
2.7	OER Creation and Use by Lecturers and Students	57
2.8	UTAUT Model	63
2.9	Theory of Reasoned Action (TRA)	65
3.1	Visual Illustration of Concurrent Embedded Mixed Methods Design	83
3.2	Pattern of Research Design I	85
3.3	Pattern of Research Design II	86
3.4	Layout of Embedded Mixed Method Data Analysis.	95
4.1	Clustered Column Chart for Demographic Variables	99
4.2	Summary of the Overall Means of the Constructs on Acceptance to Share OER.	106
4.3	Codes and Quotation Network of the Constructs on Acceptance to Share OER	109
4.4	Codes and Quotation Network **o**f the Constructs on Acceptance to Share OER	111
4.5	Codes and Quotation Network of the Constructs on Acceptance to Share OER	113
4.6	Codes and Quotation Network of the Constructs on Acceptance to Share OER	116
4.7	Graphic Illustration of Sentiment Analysis	117

4.8	Summary of overall Means of the Constructs on Acceptance to Share OER	125
4.9	Codes and Quotation Network of the Constructs on Use of Shared OER	127
4.10	Codes and Quotation Network of the Constructs on Use of Shared OER	130
4.11	Graphic Illustration of Sentiment Analysis on Effort Expectancy	131
4.12	Graphic Illustration of Sentiment Analysis on Facilitating Conditions	134
4.13	Codes and quotation network of the constructs on use of shared OER	137
4.14	Graphic illustration of sentiment analysis on facilitating conditions	138

LIST OF APPENDICES

Appendix		Page
A	Distribution of Lecturers Across the Six (6) Federal Universities in North-East Nigeria	192
B	Research Questionnaire Items	193
C	Focus Group Interview Protocol	198
D	Expert Validation Report Forms	201
E1	Reliability Results of Questionnaire on Lecturers' Acceptance to Share OER	207
E2	Reliability Results of Questionnaire on Lecturers' Use of the Shared OER	212
F	Constructs and Number of Measured Items in the Research Model	217
G	Reliability Results of Focus Group Interview Protocol	218
H	Sentiment analysis: Facilitating Conditions on Acceptance to Share OER	219
I	Sentiment Analysis: Effort Expectancy on Use of Shared OER	220
J	Sentiment Analysis: Facilitating Conditions on Use of Shared OER	221
K	Word Cloud: Performance Expectancy on Acceptance to Share OER	222
L	Word Cloud: Effort Expectancy on Acceptance to Share OER	223
M	Sample pictures of the universities visited	224

ABREVIATIONS

5Rs	Retain, Reuse, Revise, Remix and Redistribute
ASUU	Academic Staff Union of Universities
CC	Creative Commons
CORE	China Open Resources for Education
DOC	Document (in Microsoft format)
EE	Effort Expectancy
FC	Facilitating Conditions
FME	Federal Ministry of Education
GLOBE	Global Learning Objects Brokered Exchange
HEI	Higher Education Institution
HTML	Hyper Text Markup Language
ICTs	Information and Communication Technologies
IGNOU	Indian National Open University of India
IPR	Intellectual Property Right
JISC	Joint Information System Committee
LAUOER	Lecturers Acceptance and Use of Open Educational Resources
MIT	Massachusetts Institute of Technology
MOOCS	Massive Open Online Courses
NAEMT	Nigeria Association for Educational Media and Technology
NgHEOER	Nigerian Higher Education Open Educational Resources
NOUN	National Open University of Nigeria
NUC	Nigeria University Commission

OAM	Open Access Movements
OCW	Open Course Ware
ODL	Open and Distance Learning
OER	Open Educational Resources
OSD	Open Source Definition
OSI	Open Source Initiative
OSS	Open Source Software
PDF	Portable Document Format
PE	Performance Expectancy
PLS	Partial Leases Square
PPMC	Pearson Product Moment Coefficient
RAN	Reading Association of Nigeria
RTF	Rich Text Format
SEM	Structural Equation Modelling
SI	Social Influence
SPSS	Statistical Package for Social Sciences
STAN	Science Teachers' Association of Nigeria
UNESCO	United Nations Education, Scientific and Cultural Organizations
UNESCO–	United Nations Educational, Scientific and Cultural Organization–
IICBA	International Institute for Capacity Building in Africa
UNESCO-UIS	United Nations Education, Scientific and Cultural Organizations-UNESCO Institute of Statistics
UTAUT	Unified Model for Acceptance and Use of Technology

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Universities are communities of intellectuals with the primary functions of teaching, research and extension services in all domains of knowledge. For universities to function well, they must be autonomous from external interference in the conduct of their routine academic activities, have the moral and cultural capacity to pursue knowledge in its purest form and contribute meaningfully to the development of societies. To extend the boundaries of human knowledge, Skaik and Othman (2017) clarified that a university system makes its contribution through creation of new knowledge in a specific discipline and scholarly communication of that knowledge to end users. Overall, a university system is deemed as public enterprise that support social, cultural, and economic objectives of a society by producing functional and productive graduates that are globally competitive.

Despite the myriad opportunities presented by a university system, challenges persistently arise. It is ironic that Nigerian universities, renowned for their production of high-quality scientific publications (Adamu, 2017), currently lag behind their peers in developed countries in terms of global competitiveness. For universities to be globally competitive, Hodgkinson-Williams and Arinto (2017) opined that their inherent challenges of quality, access and innovation should be addressed. Addressing quality, access, and innovation concerns in education requires the attention of all stakeholders to define acceptable operational standards for practitioners.

In terms of quality, there are four key components outlined by Cardoso *et al.,* (2016) that are associated with university education. These components include the number and expertise of academic staff, measurable indicators of students' achievements, evaluations from employers regarding graduates, and the presence of university activities on the

internet. In addition to these, quality of university education is now measured by both national and international ranking and the countries' innovative capacity which play an increasing role in shaping the global standing of the university worldwide. Recently, in the Times Higher Education world university ranking of 2022 covering 99 countries and territories, only two universities in Nigeria out of 202 ranked between 501-800th in the world (Bunmi & Olatunji, 2022). This is nonetheless analogous to the Global Innovation Index (GII) which ranked Nigeria 13th position among the 27 economies in Sub-Saharan Africa and 114th position among 132 economies featured in GII of 2022 (WIPO, 2022). These indicators are equally alarming and pointing to the need for improvement in order to satisfy the increasing demand for access to university education.

In terms of access to university education, Nigeria has 202 (public and private) universities as at the year 2022 serving 2.1 million students enrolment representing only 12.6% tertiary gross enrolment ratio as compared to global average of 27% (Federal Ministry of Education, 2022). The statistic of Ministerial Strategic Plan of 2018–2022 also indicated that only about 22% of those seeking placement in higher institutions in Nigeria are admitted (National Planning Commission, 2017). Although, these statistics could be stimulated by the overarching factors such as demography, the changing needs and dynamics of the labour market, and the paucity of supportive infrastructure that can accommodate increasing student enrolment. Indeed, the question that clings to mind is, what could be the future of these candidates that failed to secure admission in tertiary institutions?

In response to this short fall of universities carrying capacity, UNESCO (2012) and Yeravdekar and Tiwari (2014) emphasised on the incorporation of open universities and distance education programs as a solution to increasing access to university education. Open universities and distance education has an underlying value that lies in enhancing students' enrolment without the accompanying need to be physically present while equally receiving

all the learning experiences. As elaborated by Khorsandi (2014) open learning programmes are now offering large scale interactive participation and open access through the world wide web. However, apart from students' enrolment through these programmes, the focus is now shifting to increasing access to teaching and learning resources that support the quantitative expansion of university education (Kiamba, 2016; Annand & Jensen, 2017).

Correspondingly, Kanwar and Mishra (2017) commented on the teaching and learning resources that support the increasing students' enrolment in universities to include open educational content such as free e-books, journals, videos and reports. Indeed, moving to open educational content is now possible given the availability of smart phones, ipads, tablets, e-book readers, and personal computers within the reach of students. Students' expertise in the use of these devices heralded their integration in teaching and learning. Also, Hatakka (2016) confirmed that embracing open content will provide a medium for accessing remote learning resources freely in almost every subject and in a variety of media (text, audio, video and animated graphics) from anywhere, any time of the day to an unlimited number of students. With this development, lecturers and students no longer have to rely on teaching and learning resources in physical mode housed in libraries and educational resource centres for their educational needs.

Additionally, educational resources that could be develop and shared openly by lecturers as enumerated by Nsofor and Bello (2015) include; course outlines, lecture notes, pod-casts, videos, multimedia, PowerPoint, tutorials, quizzes and e-books. While these resources could be developed by course lecturers as core or supplementary lecture content, the developed resources require an institutionalized repository for easy sharing and retrieval as a model for routine practice. Recently, Kanwar and Mishra (2017) unveiled the institutionalized repository often supported by policy as Open Educational Resources (OER) developed primarily for increasing access to remote learning resources; enabling

knowledge network for students; and enhancing the efficiency of educational delivery. Certainly, this development will provide a new way of transacting education and is particularly significant for universities in developing countries whose students can no longer afford proprietary resources for the reason of cost.

OER as a subset of educational technology and a sibling of Open Source Software (OSS) became an international innovation for resource collaboration favouring a new way of increasing access to teaching and learning resources. Though, Hodgkinson-Williams and Arinto (2017) opined that OER is not new in the global spheres, it has been present since the launching of Open Course Ware (OCW) project and the release of the first Creative Commons licenses in 2002, and the emergence of Massive Open Online Courses (MOOCs) in 2008. Thus, the concept of OER is comparable to open courseware and open-source software based on the philosophical view of knowledge as a collective social product demanding the attention of lecturers to relinquish it as a social property. Coincidentally, the internet itself is built on open-source technologies like the Linux operating system and Apache Web server application. Thus, anyone using the internet benefits from open-source software (Nsofor & Bello, 2015).

OER has been referred to as teaching, learning and research materials in any medium that reside in the public domain, released under an open license that permits their free use and, in some instances, re-purposing by others (Kelly, 2014). While Butcher (2011) particularized OER as an internet-based global repository for sharing educational resources such as curriculum maps, course materials, textbooks, streaming videos, podcast and any other materials that have been designed for use in teaching and learning which are made openly available for use by educators and students, without the accompanying need to pay royalties or licence fees. With these offerings, OER could presumably increase access to

resources, contribute to social inclusion, enhance gender equity and support education for special need students, in addition to improving cost-efficiency.

Presently, OER declaration had directed all countries of the world to release teaching, learning and research materials developed with public funds under an open licence to allow their reuse, revision, remixing and redistribution without the permission of copyright holders (UNESCO, 2012). In line with this declaration, the Federal Ministry of Education (FME) released OER Policy for Higher Education in Nigeria which mandated all Nigerian Universities to create and use OER to increase access and support quality teaching, learning and research (FGN, 2017). By this policy, Higher Education regulatory agencies and all Higher Education Institutions in Nigeria shall be committed to the philosophy of OER in raising awareness, building capacity and fostering positive attitudes among educators, learners and researchers, regarding the acceptance and use of OER, with a view to enhancing quality and equity in education. While it is not necessary that policies are developed first, having policies in place avert ad-hoc practice and provide a legal framework for OER implementation (Kanwar & Mishra, 2017).

In response to this policy, universities in Nigeria have already introduced OER repository and mandated lecturers to upload teaching and learning resources under their possession for public use (OER Policy, 2017) thus, leading to the culture of openness. Traditionally, embracing a culture of openness in knowledge sharing as a core value is a challenge for university lecturers partly because, the mind-set of majorities is set on the culture of "not open" and these majorities prefer to maintain the status quo (Torres, 2013). The consequence of allowing the status-quo to continue over a period of time will marred the objective of OER which dwell on promoting the idea of open exchange, collaborative participation, reuse, remix and redistribution of learning resources. In relation to the

foregoing, accepting to share resources as OER and using the shared resources for teaching, learning and research might place lecturers at the highest level of professionalism.

Lecturers' acceptance to share OER refers to a mental disposition to contribute resources in any medium (digitized and print) to the university OER repository. Apparently, accepting the culture of open sharing (of print and digital resources) in Nigeria is completely new for university lecturers particularly as it relates to releasing their intellectually developed resources for free use. It is also common to accept the fact that if university lecturers do not share learning resources under their possession, they have accessed it in some ways. Likewise, it is worthy to note that University lecturers being prime stakeholders for OER policy implementation, are not unfamiliar with its potential benefits pedagogically for communicating the curriculum via the repository and technologically, the ease with which digitised content can be shared. However, accepting to share knowledge in OER repository is a multifarious process that require the spirit of collaboration rather than having the quantum of knowledge content alone (Christopher & Julie, 2018).

The spirit of collaboration as noted by Hatakka (2016) is now a global practice among university lecturers, researchers, and practitioners in education with a motive to improve the efficiency and effectiveness of knowledge communication. Certainly, knowledge sharing through OER is now simplified with the evolution of ICT paving ways for sharing a lightweight and cost-efficient file in various file formats to the end users (Hilton, 2016). Although, OER could be accepted as an innovative practice supporting primary interactions between lecturers and students at one end, and use as a support mechanism for improving interpersonal communication and managing outreach to relevant communities of practice.

Utilization of OER is closely related to how frequent lecturers deposit digitised resources on OER repository at one end, and how co-lecturers and students reuse, revise, remix, and

redistribute the shared OER. This means that OER is not limited to uploading resources in the university OER repository but extended to include downloading the shared OER and using it to a particular teaching, learning and research purposes. Previous study by Panda and Santosh (2017) have shown how university lecturers use of OER suffer from unpredicted challenges that have either slow its wider adoption or stand being rejected completely. Chen (2017) reported that the challenge of ascertaining lecturers' behavioural intention to use OER has also been considered to be a major concern to university management who are left in contemplation as to why lecturers remain reluctant to share and use digital resources via OER. Studies on lecturers' use of OER as resource sharing environments and attitude to resource sharing have been rather shallow within a specific university in north-east Nigeria.

Despite the existing research in OER domain, studies indicated that it is yet to become an integral part of educational practice in Nigeria and its acceptance by lecturers and subsequent use by lecturers and students has not been as smooth as predicted (Nayantara, 2018). For OER to become modus operandi in Nigerian universities, it must be used as a repository for resource sharing by university lecturers whilst exploiting all the possible opportunities it has to offer. Chen (2017) commented that using OER as a resource sharing repository require empirical understanding of OER, antecedents of lecturers' attitude to OER, and the determinants that explain their behavioural intention to either accept or use it.

In understanding the determinants that explain lecturers' intention to accept and use OER in university settings, the Unified Theory of Acceptance and Use of Technology (UTAUT) model with four constructs (performance expectancy, effort expectancy, social influence

and facilitating conditions) was applied as direct determinants of lecturers' acceptance and use of OER. Building on the theoretical constructs, Performance expectancy refers to the extent to which educators believe that sharing and using OER will help them to enhance their teaching performance and that of their colleagues. Performance expectancy is rated the strongest predictor of lecturers' intention to accept and use technologies in both voluntary and involuntary settings (Venkatesh *et al.,* 2003). Though, performance expectancy alone might not account for lecturers' acceptance to share OER without the support of their effort expectancy. Thus, the study seeks to establish the influence of Performance Expectancy on lecturers' acceptance to share OER to their university repository.

Effort expectancy refers to the degree of ease associated with sharing and use of OER repository (Venkatesh, *et al.,* 2003) and that the sharing and use would be free of effort (Davis, 1989). This is associated with the level of easiness and flexibility of sharing content via OER and using the 5Rs (Retain, Reuse, Revise, Remix, and Redistribute) model which clarify some of the rights that can be incorporated with OER development and use (Wiley, 2015). While effort toward sharing and using the shared OER is also linked to lecturers' social norms, these social norms could influence acceptance and use of OER. Therefore, the study seeks to determine the influence of effort expectancy on lecturers' acceptance to share OER.

Social influence refers to the degree to which lecturers perceives that the opinion of their peers (important other lecturers) would influence them to share and use the shared OER. Important others in this study include university management, senior colleagues, and students. This is directly tied to the expectation of colleagues regarding the use of OER and

how that expectation overwhelms lecturers to accept and use it. Social influence also consists of lecturers' image, job relevance, voluntariness of use, and their perception toward the usefulness of OER. The research study seeks to determine the impact of social influence on lecturers' acceptance to share and use OER. However, the three preceding constructs, performance expectancy, effort expectancy, and social influence could not deliver OER acceptance and use without an enabling environment. The enabling environment was referred to as facilitating conditions (Venkatesh *et al.,* 2003).

Facilitating conditions refers to the degree to which lecturers are satisfied with the institutional framework, policies, and technical infrastructure (availability of time, computers, internet connectivity, speed of internet bandwidth and proficiency in ICT skills) to support the sharing and use of OER innovation (Venkatesh *et al.,* 2003). The research study seeks to establish the possible influence of facilitating conditions on lecturers' acceptance to share and use OER for resource sharing. In addition, UTAUT model introduced such moderating factors as gender, age, experience, and voluntariness of use from the perspective of social psychology. These moderating factors help in addressing behavioural differences emanating from diverse groups of lecturers.

While much research in OER field dwell on UTAUT constructs, little attention has been given to lecturers' attitude to resource sharing on OER repository and very few studies known to the researcher poised to measure attitudes. The underlying reason behind investigating lecturers' attitude to resource sharing on OER is that lecturers have certain beliefs and attitudes about pedagogy and these can play an important role in contributing, using, and reusing OER (Waring & Evans, 2015). In using OER, the 5Rs has to be applied to lighten the lecturers' workload in preparing lecture materials and to meet their varied needs. However, applying the 5Rs requires a change in pedagogical practices, beliefs, and

a gradual move towards a more open, participatory, collaborative, creative sharing culture which are attitude driven.

Attitude is defined as the degree of overall affective reaction of an individual to using the technology (Venkatesh *et al.,* 2003). It relates to an individual's thinking and feelings about the use of technology. Studies indicated that attitude directly and significantly influences behavioural intention to use a particular technology (Davis, 1989; and Venkatesh, *et al*, 2003). Building on the theoretical and methodological inadequacies of previous studies, the current research investigated the antecedents of lecturers' attitude toward resource sharing on OER repository. Based on the constructs generated from the UTAUT model with attitude as an additional construct, this study is poised to investigate lecturers' acceptance to share knowledge on the educational domain of OER, the use of shared OER and attitude to resource sharing in North-East universities.

1.2 Statement of the Research Problem

Following the establishment of National Repository by the National Universities Commission (NUC), referred to as Nigerian Higher Education Open Educational Resources (NgHEOER), all higher education institutions were encouraged to develop their own institutional OER Policy aligned with the national Policy on OER, and create institutional repositories to share teaching, learning, and research materials on the Web (NUC, 2017). In line with this, university lecturers were directed to develop resources using multiple media facilitated by the reuse, revise, and remixing of existing openly licensed resources (OER Policy, 2017). Their development should focus on contextualizing and customizing resources to reflect the peculiarities of their localities and upload same to their institutional OER repository.

Conversely, lecturers' response to OER policy directive is slow in spite of university managements' commitment towards encouraging lecturers to contribute resources to OER and utilize the resources already shared in the University OER repository. A group of existing literature on the trends of OER acceptance and utilization showed that lecturers are still nursing reservations regarding acceptance to share and use OER in Nigeria (Igwe, 2020; Ofoegbu, *et al.*, 2021). This is evidenced in the number of resources available in a specific university OER repositories which does not commensurate the number of lecturers in the faculties of these universities while other repository components remained barely empty. A second considerably larger set of studies explaining reasons for noncompliance to OER policy directive reported a variety of interpersonal, attitudinal and behavioural barriers that hinder acceptance and utilization (Panda & Santosh, 2017). A third set of studies regarding acceptance to share resources on OER and subsequent utilization of shared OER revealed intertwined result often related to western geographies with few studies in Africa (Kandiero, 2015; Percy & Belle, 2016). The available knowledge regarding acceptance to share OER and utilization of shared OER is unclear in north-east universities calling for a deliberate action through empirical investigation.

Consequently, previous studies overlooked the antecedents of lecturers' attitude toward knowledge sharing on OER repository (Yogesh *et al.*, 2017; Zhang & Li, 2017; Padhi, 2018) while this study prioritize lecturers' attitude to be central to OER implementation. This is because, the consequence of untimely acceptance of OER to be a routine practice in academia is tantamount to noncompliance to OER policy. Further untold consequences include narrowing the chances for students' access to learning resources, questioning the quality of education in Nigeria and negatively affecting the university ratings globally and denying Nigeria a visibility on the global OER Map. This study, Determinants of Lecturers' Acceptance, Use and Attitude towards Open Educational Resources (OER) for Knowledge

Sharing in Universities of North-East Nigeria, sought to address this gap through a unified theory of acceptance and use of technology (UTAUT) model with a view to unveiling a sustainable interference that could be useful for the uptake of OER in North-East, Nigeria.

1.3 Aim and Objectives of the Study

The study investigated the determinants of lecturers' acceptance, use, and attitude towards open educational resources (OER) for knowledge sharing in universities in North-East Nigeria. The specific objectives of the study are to examine the:

1. influence of performance expectancy on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria;
2. influence of effort expectancy on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria;
3. impact of social influence on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria;
4. influence of facilitating conditions on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria;
5. influence of performance expectancy, effort expectancy, social influence and facilitating conditions on lecturers' attitudes toward knowledge sharing on OER in the selected Universities of North-East Nigeria;
6. influence of performance expectancy on lecturers' use of shared OER in the selected Universities of North-East Nigeria;
7. influence of effort expectancy on lecturers' uses of shared OER in the selected Universities of North-East Nigeria;
8. impact of social influence on lecturers' uses of shared OER in the selected Universities of North-East Nigeria;

9. influence of facilitating conditions on lecturers' use of shared OER in the selected Universities of North-East Nigeria; and
10. influence of performance expectancy, effort expectancy, social influence, and facilitating conditions on lecturers' attitudes toward the use of shared OER in the selected universities in North-East Nigeria.

1.4 Research Questions

The following eight quantitative and two qualitative research questions guided the study.

Quantitative research questions;

1. What is the influence of performance expectancy on lecturers' acceptance to share OER in the selected universities of North-East Nigeria?
2. What is the influence of effort expectancy on lecturers' acceptance to share OER in the selected universities of North-East Nigeria?
3. What impact does social influence have on lecturers' acceptance to share OER in the selected universities of North-East Nigeria?
4. What is the influence of facilitating conditions on lecturers' acceptance to share OER in the selected universities of North-East Nigeria?
5. What is the influence of performance expectancy on lecturers' use of OER in the selected universities of North-East Nigeria?
6. What is the influence of effort expectancy on lecturers' use of OER in the selected universities of North-East Nigeria?
7. What is the impact of social influence on lecturers' use of OER in the selected universities of North-East Nigeria?
8. What is the influence of facilitating conditions on lecturers' use of OER in the selected Universities of North-East Nigeria?

Qualitative research questions;

9. How do PE, EE, SI, and FC serve as the determinants in lecturers' attitudes towards knowledge sharing on OER in the selected universities of North-East Nigeria?
10. How do PE, EE, SI, and FC interact to determinants in lecturers' attitudes toward use of shared OER in the selected universities of North-East Nigeria?

1.5 Research Hypotheses

The following hypotheses stated in null form were tested at 0.05 level of significance:

HO_1: Performance Expectancy (PE) would not influence lecturers' acceptance to share OER in the selected universities of North-East Nigeria.

HO_2: Effort Expectancy (EE) would not influence lecturers' acceptance to share OER in the selected universities of North-East Nigeria.

HO_3: Social Influence (SI) would not influence lecturers' acceptance to share OER in the selected universities of North-East Nigeria.

HO_4: Facilitating Conditions (FC) would not influence lecturers' acceptance to share OER in the selected universities of North-East Nigeria.

HO_5: Performance Expectancy (EE) would not influence lecturers' use of OER in the selected universities of North-East Nigeria.

HO_6: Effort Expectancy (EE) would not influence lecturers' use of OER in the selected universities of North-East Nigeria.

HO_7: Social Influence (SI) would not influence lecturers' use of OER in the selected universities of North-East Nigeria.

HO_8: Facilitating Conditions (FC) would not influence lecturers' use of OER in the selected universities of North-East Nigeria.

1.6 Significance of the Study

The findings of this study could be of significance to government, university management, open universities, lecturers, students, professional organizations, and researchers.

Specifically, with OER policy in place, the outcome of this study will provide a useful information to stakeholders in education on the present state of OER policy implementation, inform the decision for policy adjustment and suggest for increasing investment and advocacy for its uptake. The findings of this study could also help government with feedback on the existing facilities such as hardware, software, and consumables required for OER implementation and the need for the development of specialized software that could be used to ease the uptake of OER for teaching and research work in the Universities of North-East Nigeria.

Also, the study would be significant to university management in particular and university system in general. For university management, the study will unveil the attitude of lecturers to OER and knowledge sharing on OER repository. This will help university management to understand lecturers' predispositions regarding OER and consider policy readjustment that favours their predispositions for effective utilization of OER. This will further inform the management on the number of digitized resources available within the possession of its academic staff and inform the decision to attract additional research funding and the need for capacity building workshop on OER development. For the university system, the outcome of this study will validate the level of lecturers' acceptance and utilization of OER which is a precursor of quality measure in educational delivery. This is particularly significant in attracting new students, expanding the university reputation and advance its public service role.

The outcome of this study on OER uptake in Nigerian public universities will have significant implications for open universities in Nigeria. Open universities will be in a better position to benefit from the findings of this study as it will help them to assess the level of OER usage and uptake in their systems, which can be used as a benchmark to measure their own practices. Moreover, open universities can use the findings to evaluate the

effectiveness of their own OER programs and identify areas for improvement. The study will provide valuable insights into the best practices for OER development, sharing and use, and will help open universities to align their strategies with the latest trends and practices in the field. Furthermore, the study will also help to create awareness among open universities about the importance of OER and its potential to improve the quality and accessibility of education. It will encourage open universities to explore new ways to incorporate OER into their courses and programs, and to engage with other institutions to promote the adoption and sharing of OER.

The outcome of the study would be significant to lecturers by providing an overview of the current perceptions of lecturers regarding OER for faculty leadership to plan for future staff development on OER. Similarly, the findings will provide information on the need for peer collaboration and interdisciplinary research that will benefit the university community. It will further encourage lecturers to work collaboratively with peers (including peer reviews) and publish materials openly that are already routinely produced as part of teaching and learning, including course outlines, course information booklets, hand-outs and course assessment tools. Over time, such practices could generate a rich, inter-institutional repository of materials paving way for cross-fertilization of ideas. In addition, academic staff could benefit tremendously from using existing online networks and communities of practice collaboratively to develop OER, as well as to engage in dialogue about their experiences in teaching and learning. Such communities of practice can also provide an engaging experience for sharing knowledge and for publishing resources in existing repositories.

The outcome of this research would be significant to students by providing them with an up-to-date learning resource that will facilitate a better understanding of the content area of their subject matter as provided in the university OER repository. Findings of the study will

promote awareness to students on the potential of OER to improve their educational experience in using open resources while freeing their purse from buying proprietary learning resources (Butcher, 2011). Similarly, as students adapt resources via OER repository, they can equally learn how to create their own resources and publish it as OER preferably under the guidance of academic staff and within institutional protocols using an open licence.

The findings of this study have the potential to greatly benefit both the Educational Media and Technology Association of Nigeria (EMTAN) and the Academic Staff Union of Universities (ASUU). By utilizing these findings, these unions can provide their members with crucial information for organizing capacity building workshops and seminars. These initiatives would serve to update their members on the importance of utilizing Open Educational Resources (OER) to promote inclusive education and foster lifelong learning. Moreover, the study's outcomes can serve as a valuable point of reference for all stakeholders involved, including accreditation bodies. These findings can offer insights and guidance in measuring the quality of teaching, learning, and research resources within universities. Additionally, the study highlights the innovative capacity of universities, providing a basis for advancements in educational practices.

The study's findings carry substantial importance for researchers in the field of education, offering them empirical evidence to advance their studies on the integration of Open Educational Resources (OER) within Nigerian universities, as well as in broader contexts across Africa and beyond. This research serves as a cornerstone for expanding knowledge in the field by identifying key areas that require further investigation in the realm of OER in Nigeria. It not only highlights existing research gaps but also offers valuable insights into

unexplored avenues, providing a roadmap for future researchers to explore and contribute to the understanding and implementation of OER in education. The study's comprehensive analysis and empirical evidence pave the way for continued research and development in this vital area, ultimately benefiting educational practices and fostering progress in the utilization of OER both within Nigeria and globally.

1.7 Scope of the Study

The study was limited to determinants of lecturers' acceptance, use, and attitude towards open educational resources for knowledge sharing in universities in North-East Nigeria. The study was carried out in three selected Federal universities located within the three states (Adamawa, Bauchi and Borno State) in North East Nigeria. The North East Nigeria comprises six states: Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe. Samples of the study was restricted to lecturers in faculties of education in Modibbo Adama university of Technology Yola, Abubakar Tafawa Balewa University Bauchi, and University of Maiduguri, Borno State. The determinants were delimited to the The content was limited to the sharable resources in OER repository such as conference papers, books, lecture notes, audio lectures, journals, videos, dissertations, animations, graphics and courseware. While the timeframe of the study was limited to twelve weeks comprising two weeks in each of the three selected universities.

1.8 Operational Definition of Terms

The following terms were operationally defined as used in the study.

Acceptance: A mental disposition of lecturers to share and contribute resources in any medium (digitized and print) to the university OER repository.

Attitude: The belief of lecturers about OER which, positively or negatively influence their behaviour towards accepting to share and using the shared OER in the repository.

Knowledge sharing: the collaborative and open exchange of knowledge among educators, researchers, and learners which facilitates the creation of a rich and diverse collection of resources, catering to various subjects, disciplines, and educational levels.

Open: permissions granted to users to engage in revising and remixing OERs.

Open Educational Resources (OER): OER are teaching, learning and research materials in any medium released under an open licence to be use, repurpose, and be redistributed to others with no or limited restrictions.

Repository: A digitized storage system with content deposited by practitioners and use by designated communities learning, teaching, and research.

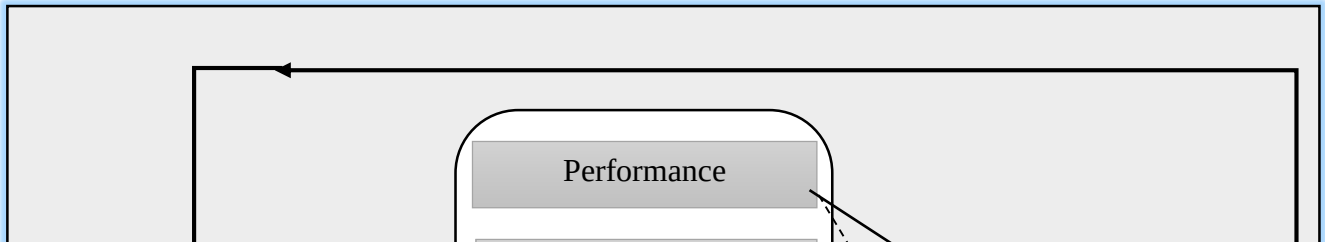
Resources: As referred to in this study are conference papers, books, lecture notes, audio lectures, journals, videos, dissertations, animations, graphics, music, and courseware.

Use: The utilization of digitized resources already shared on OER repository either by lecturers themselves, their students or any other person who is granted access to the university OER. Specifically, it deals with lecturers' frequency in reusing, remixing, redistributing, and repurposing of OER for personal or professional gains.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Conceptual Framework of the study



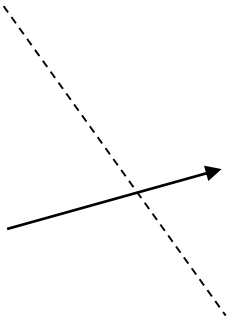


Figure 2.1: Conceptual framework
Source: Author

The conceptual framework illustrates the relationships between the independent variables, namely performance expectancy, effort expectancy, social influence, and facilitating conditions, and the dependent variables, which include lecturers' acceptance, use, and

attitude towards knowledge sharing on the Open Educational Resources (OER) repository of selected universities. The framework acknowledges the significance of these independent variables in shaping lecturers' perceptions and behaviors regarding the adoption and utilization of the OER repository. Performance expectancy plays a crucial role as it encompasses lecturers' beliefs about the potential benefits and improvements in their teaching effectiveness that can be achieved through the OER repository.

Effort expectancy examines lecturers' perceptions of the ease of use and the level of effort required for knowledge sharing on the platform. Additionally, social influence factors such as peer recommendations, support from colleagues and administrators, and prevailing norms within the academic community, as well as facilitating conditions including the availability of resources and technical support, are considered influential determinants of lecturers' acceptance, use, and attitude towards the OER repository.

The relationships within the conceptual framework propose that the independent variables have significant effects on the dependent variables. For instance, if lecturers perceive a high level of performance expectancy from the OER repository, believing that it will enhance their teaching effectiveness and knowledge sharing capabilities, they are more likely to accept and use the platform for these purposes. Similarly, when lecturers perceive a low level of effort expectancy, indicating that the OER repository is user-friendly and requires minimal effort, their acceptance, use, and positive attitude towards the platform are expected to increase.

Furthermore, social influence factors, including the influence of colleagues and administrators, can sway lecturers' decisions to accept and use the OER repository. Additionally, the availability of facilitating conditions, such as resources, training programs, technical support, and appropriate technology, can positively influence lecturers'

acceptance, use, and attitude towards knowledge sharing on the platform. Thus, the relationships between the independent and dependent variables in the conceptual framework offers a valuable tool for understanding the factors that influence lecturers' acceptance, use, and attitude towards knowledge sharing on the OER repository.

The framework provides a comprehensive overview of the interplay between different variables, highlighting the importance of performance expectancy, effort expectancy, social influence, and facilitating conditions in shaping lecturers' behaviors and perceptions. Empirical research utilizing this framework can help validate and refine the relationships, providing deeper insights into the factors that contribute to the successful adoption and utilization of OER repositories in selected universities. The framework serves as a guide for designing interventions, policies, and strategies to promote knowledge sharing among lecturers and facilitate the effective integration of OER repositories into educational institutions.

2.1.1 Concepts of information and communication technologies (ICT)

ICTs stand for information and communication technologies and are defined as a diverse set of technological tools and resources used to create, store, communicate, and manage information. These technologies include computers, the Internet, broadcasting technologies (radio and television) and telephony. Motteram (2017) emphasised that these technologies have the capacity to provide choices for lecturers in terms of teaching strategies they choose to use, systems design options and approaches for administering and managing students learning outcome. For students, ICT offers them a variety of learning options such as learning through google, Wikipedia, YouTube and an unending opportunity for simple data sharing and globalized communication systems.

ICTs are key components for increasing quality, access and innovation in university education and had already been named by UNESCO (2012) as having the capacity to support teaching, learning and research. Recently, FME, (2017) focus on ICT related infrastructure projects such as establishment of virtual libraries, the creation of information technology hubs and institutionalization of a functional campus wireless networks for Nigerian universities. This effort toward fixing technology in classrooms provide digital access to remote resources to support innovative teaching and learning. Motteram (2017) remarked that ICT can be a powerful driving force for innovation in education as it facilitate the development of quality instructional materials available to lecturers and students.

Additionally, ICT is potentially aiding the development of high-quality assessments by capturing student learning and accelerating the collection and use of data to provide rich feedback to students in good time. However, innovative teaching with ICT facilities rarely happens without taking cognizance of the instructional use of these technologies. To do that, lecturers have to be acquainted with educational technology principles and practices guiding the instructional use of technologies such as PowerPoint presentation, interactive white board and online classrooms to facilitate learning. Cardoso, *et al.*, (2016) noted that if lecturers use technologies for teaching, they will also use it to compute students' assessment in order to minimize errors or ensure accuracy of results.

Thus, this development brings about digitization in the field of education where lecturers frequently update instructional contents based on research and global practices. Similarly, Annand and Jensen (2017) remarked that digitization does not stop at changing instructional content and lecturers teaching practices, it has succeeded in making instructional resources freely available in digital formats. For example, PowerPoint presentations, audio lectures,

video instructions and simulated graphics are now available for adaptation, modification, reuse and redistribution to end users. Thus, with digitization of instructional resources through open sharing platforms, lecturers have the power to continue renewing their instructional content and collaborate with colleagues in other institutions of higher learning for professional collaboration. Kanwar and Mishra (2017) reiterated that digitization is an enabler for open and distance learning and has the power to expedite knowledge sharing among individual educators, community of practice and inter-university collaborations. Furthermore, ICT has supported a number of open education practices with interconnected relationships.

2.1.2 Concept of Open and Distance Learning (ODL)

Universities are dominated by technologies that supported teaching and learning in a closed environment. With the availability of ICTs and its accompanying opportunities have given rise to the growth of open and distance learning (ODL) as a method of educational delivery and a response to increasing access to university education. Distance education was conceptualized as provision for those people who could not access face-to-face education either because they cannot afford the latter or because circumstances demand that they study on a part-time basis. This conceptual shift had allowed for greater flexibility and access to university education while opening up possibilities for collaboration among students. Butcher, (2011) opined that ODL have the capacity to extend educational opportunities to all learners including low-income groups, physically challenged and students living in remote locations as well as those who are constrained by cost or time and are unable to enrol for campus-based education.

The National Open University of Nigeria (NOUN), boasting a student enrollment of over 400,000 as of July 2017, has played a vital role in increasing access to university education for various groups of people in Nigeria (Adamu, 2017). It is noteworthy that several public

universities, such as the University of Ibadan, Obafemi Awolowo University of Ile-Ife, University of Lagos in Akoka, University of Maiduguri in Maiduguri, Modibo Adama University of Technology in Yola, University of Abuja in Abuja, Ladoke Akintola University of Technology in Ogbomoso, and Ahmadu Bello University in Zaria, are also making strides in providing functional, flexible, accessible, and cost-effective education to Nigerian citizens (NUC, 2017).

It is important to recognize the significant impact these universities have had in expanding access to education for Nigerians. By offering various modes of learning, including open and distance learning, these universities are reaching a wider audience, including those who may not have been able to attend traditional brick-and-mortar universities. Furthermore, the provision of flexible learning options allows students to balance their education with work and other responsibilities. Thus, the efforts of these universities are crucial in meeting the increasing demand for higher education in Nigeria, as well as promoting lifelong learning and skill development among citizens.

This development has removed the geographical barrier to accessing university education by seven per cent (FGN, 2017) and had increased inter-university collaborations and digital resource sharing. Bliss and Smith (2017) stated that with the continue production of digital resources among educators, the availability of communication technologies and the internet, the drive to share and collaborate openly enveloped the academic community globally. Jung *et al.,* (2017) added that this has necessitated the development of a formal sharing platform for digital resource between academic institutions, individual academics and students. One of the recent developments toward digital resource sharing involves the use of open education applied by both educators and students to manage digital resources for national and international collaborations (Kanwar & Mishra, 2017).

The word “Open” denotes information that can be freely used, shared and built on by anyone, anywhere, for any purpose. There are three significant principles behind this definition of openness. First, the information is made available as a whole and at no more than a reasonable reproduction cost, preferably by downloading over the Internet in a convenient and modifiable file formats such as PDF, RTF, DOC and HTML. Second, data can be use, reuse and redistributed including intermixing with other datasets to create a high-quality teaching and learning resource for other purposes. Finally, everyone must be able to use, reuse and redistribute data with no restrictions that would prevent ‘commercial’ use (Open Knowledge Foundation Blog, 2013).

Additionally, Open Knowledge Foundation Blog (2013) enumerated two important elements attached to the philosophy of openness as legal and technical openness which is usually provided by applying an appropriate (open) licence that allows free access to, and reuse of the content, or by placing the content into the public domain. To do this, contents are attached to open licences which indicate that a piece of content is open and free from any legal restrictions. While the technical openness ensures that there are no technical barriers to using the content. These technical barriers require that content is made readable by machine and available in bulk.

The philosophy underlying openness has potential implications for the development of open education environments (Chen, 2017). Open education is based on the idea that knowledge is a public good, a divine treasure acquired through learning or inspiration and should therefore remain open for everyone to use and re-use. Bliss and Smith (2017) stress that knowledge sharing for the benefit of society is a core value of academics. In research, Kanwar and Mishra (2017) stated that universities have no issue with sharing and building

on the ideas of others, thus, experienced researchers are aware that a thorough literature review of existing knowledge is the starting point in resolving a research question. Nonetheless, Kelly (2014) opined that some teachers had perception that teaching materials must be locked behind restrictive copyright regimes that minimise sharing at the expense of learning.

In contrast, open education provides a unique opportunity to expand and integrate research traditions associated with the notion of building on the ideas of others into a generic teaching practice. In this way, universities can leverage the potential of the Internet and open education to research the best practices for teaching and learning (Kurelović, 2018). Open education opposed restrictions such as copyright, fees, and geography placed on teaching and learning resources. As such, high quality content is made freely accessible to the end users. This development as Lawrence and Lester (2018) put it will further the cause of education and portray a possible indication of how people will learn in the future. It is worthy to note that open education was made possible with the development of open source software technology by providing a platform for supporting interactions between open education providers and students.

2.1.3 Open Source Software (OSS)

Open Source Software (OSS) which is a sibling of Open Educational Resource (OER) denotes a software whose source code is made available for modifications by co-programmers. The source code which is the secrete programming language of which the computer programmers manipulate to develop or change how a piece of software program works is made freely available. By making it source code freely available, programmers

can improve programs by adding features to it or fixing parts that do not suite their demand. The idea behind open source software is primarily to embrace and celebrate open exchange, collaborative participation, rapid prototyping, transparency, and community development.

Bliss and Smith (2017) noted that the concept of open source and free sharing of technological information existed long before computers. Although, its prominence in the world of software development was not farfetched, until the Joint Information System Committee (JISC) (2005) briefing paper enunciate the four key principles of open source technologies as the source code is available to the end-user, the source code can be modified by the end-user, there are no restrictions on redistribution or use, and the licensing conditions are intended to facilitate continued reuse and wide availability of the software, in both commercial, and non-commercial contexts.

JISC (2005) briefing paper added that 'open source' is reserved for licences which are certified by the Open Source Initiative (OSI) to meet the criteria of the Open Source Definition (OSD). Similarly, Kanwar and Mishra (2017) reiterated that Open source on the Internet is not new, it began when the Internet was just a message board, and progressed to more advanced presentation and sharing platform like a website. Currently, Kurelović (2018) stated that there are many websites that promote open source sharing from source code, open software and digital resources. Though, the idea of open source is to eliminate access costs to the consumer and the creator by reducing the restrictions of copyright (Singh, *et al.,* 2015).

Open source software is used in a variety of ways by teachers, students, and school organisation in general. Many types of computers used in schools or at individual level involve some kind of informal learning, such as performing a search with Google, using Wikipedia, making and using podcasts, writing and reading blogs and wikis. The use of

OSS in schools is being explored and applied in many universities across geographies where cost savings and stimulating teaching and learning are important concerns. A number of system software exists comparable to open source as: The Linux operating system, Mozilla Firefox Web browser, and OpenOffice.org productivity suite. The most widely used open source learning management system as open source software include Moodle, Claroline, Dokeos and Sakai (Kanwar & Mishra (2017).

Thus, the most popular open source application software widely used by educators are: open office impress as online presentation software, open office suite as word processor, spreadsheet, and presentation software, audacity as voice recording and editing tool, Avidemux as video editing tool, cabos as file sharing and storage programs, firefox as browsers, freemind as collaborative writing, and Moodle as learning management system. The open source software enumerated are projects developed by a community of developers, and has gained levels of popularity that rival those of their commercial counterparts. The availability of such open source solutions with the philosophy of sharing intellectual property among educators offers a low-cost technology option for education service providers including higher education institutions (Nsofor & Bello, 2015).

With open source software (OSS), Nsofor and Bello, (2015) noted that educators are not confined to using proprietary software, education managers can leverage OSS to set up platforms to offer education at little cost. Similarly, Kanwar and Mishra (2017) stated that open source software allows computer users to view web pages, check email, chat with friends, stream music online and play multiplayer video games on their computers and mobile phones. Singh *et al.*, (2015) enumerated freedoms available to teachers and students while using online word processing, dictionaries, calculators, email management, and

image editing software that they do not install and run on their personal computers. Instead, they simply access these programs on remote computers by using a Web browser or mobile phone application.

To access and use OSS, Singh *et al.*, (2015) enumerated four types of freedom specifications from which the user stands to benefit as follows; the freedom to run the programme for any purpose, the freedom to study how the programme works and adapt it to your needs, the freedom to redistribute copies of the software, the freedom to improve the programme and release your improvements to the public, to benefit the whole community. Thus, Open Educational Resource and Open Source Software have many aspects in common, a connection first established in 1998 by David Wiley, who introduced the concept of open content by analogy with Open Source. Conversely, a common understanding regarding the two concepts (OER and OSS) is to advance knowledge sharing among educators and provide an enabling environment from which contents can be shared digitally to facilitate knowledge consumption in higher education (Walji & Hodgkinson-Williams, 2017a).

2.1.4 Open content sharing

Open content sharing in digital and non-digital form is utilized in the universities in the area of Journal publication, organisation of conferences and workshops, public lectures and inaugural lectures. Conversely, contents shared in these platforms are only for consumption rather than being made open for reuse, revision and redistribution by others. Thus, writers of conference papers, journals, public lectures still hold on to their intellectual property rights restricting others from copying, repurposing and redistribution of these content. A

key concern for educators regarding content sharing as Annand and Jensen (2017) put it, is related to giving away intellectual property with potential loss of commercial gain that might come from it. Similarly, Daud *et al.,* (2015) cautioned that these concerns are often combined with anxiety that others will take unfair advantage of their intellectual property, benefitting by selling it, plagiarizing it by claiming its authorship.

Conventionally, Kandiero (2015) remarked that other educators held a belief that sharing their educational materials will open their work to scrutiny by their peers and that their peers may mock them or consider their work to be of poor quality. Alternatively, Mishra, *et al.*, (2016) summarised how educators' concerns can be dealt with; thus, if the concern is the loss of commercial opportunity, then engaging staff with incentives will facilitate sharing; if the concern is about peer and student scrutiny, then sharing policy at the school management level will overcome resistance to content sharing. Panda and Santosh (2017) stated that as open sharing of digital resources under open licences is gaining more popularity, experiences shows that lecturers' acceptance to open sharing is slow. This happens because educators tend to invest time in improving their materials before sharing, and the feedback receive from peers and students' scrutiny will require further improvements. Percy and Belle (2016) argued that despite lecturers' slow acceptance to share content openly, open content sharing success for teaching and learning lies not in content itself, but in the ability of lecturers to guide students effectively through educational resource pathways.

Additionally, Skaik and Othman (2017) opined that offering effective support to students whether at practical sessions, tutorials, individual counselling sessions in face-to-face and online will facilitate acceptance to share. Nwabachili (2016) submitted that sharing digitized content between lecturers and students publicly under an open licence is the safest way to protect the author's intellectual property right (IPR). This is because, the open

licence ensure that the content shared remains attributed to the original author. Similarly, Panda and Santosh (2017) added that open content sharing can expose plagiarism by making the original materials easy to access. In addition, Torres (2013) argued that releasing materials under an open licence also reduces the incentive for others to lie about the source of materials because they have permission to use them.

Stenius *et al.,* (2016) contends that contents shared via university portals can generate a community of users who constantly visit the portal to gained free access to resources. For the universities; they used the free content sharing to market their services. Educational institutions that succeed economically in an environment where content has been digitized and is increasingly easy to access online are likely to do so because they understand that their real potential educational value lies not in content itself, but in offering related services valued by their students (Zhang & Li, 2017). These might include: guiding students effectively through educational resources (via well-designed teaching and learning pathways); offering effective student support (such as practical sessions, tutorials, individual counselling sessions); and providing intelligent assessment and critical feedback to students on their performance (ultimately leading to some form of accreditation). Within this environment, the more other institutions make use of their materials, the more this will serve to market the originating institution's services and thereby attract new students.

For individual lecturers, getting incentives from the university management for sharing content openly are most likely to flow if the institution has policies to reward such activity (UNESCO–IICBA, 2016). For instance, the university policies should target, at worst, to make it a parameter for lecturers' promotion or, at best, to incentivize lecturers for open sharing of knowledge (Annand & Jensen, 2017). Thus, for most educators, the incentives and the reward for research publications may serve as a catalyst for further collaboration

and open sharing of knowledge. Open sharing of knowledge maximizes the likelihood of lecturers' career progression. Stenius *et al.,* (2016) agree with this and remarked that lecturers that hide their educational resources will likely limit their educational careers by excluding themselves from opportunities to improve their teaching practice and domain-specific knowledge. The exclusion occurs as a result of non-participation with the growing networks of educators around the world. Those who share materials openly already have significant opportunities to build their individual reputations through these online vehicles in relation to the quality of what they are sharing.

2.1.5 Open licence

Central to the issue of open content sharing is licensing which denotes a legal framework such as Creative Commons (CC) that facilitate sharing and direct how open a resource is. Creative Commons provide a mechanism to ensure that authors of materials retain acknowledgements for their work while allowing it to be shared. There are practical solutions to define openness for legal purposes. For example, a widely used description of openness is the '4Rs' suggested by Wiley (2009) to express core dimensions of Open Content as Reuse – the right to reuse the content in its unaltered / verbatim form, Revise – the right to adapt, adjust, modify, or alter the content itself, Remix – the right to combine the original or revised content with other content to create something new, and Redistribute – the right to make and share copies of the original content, your revisions, or your remixes with others. These 4Rs define the degree of openness that a licence provides users with free permission to exercise these rights with regard to that content.

As Wiley (2009) mentioned, the more conditions placed on the user, the less open the content; the fewer restrictions a licence places on a user's right to exercise the 4Rs, the more open the content. This explains whether these rights are granted conditionally, for example, requiring attribution, distribution of derivatives under a specified license, or prohibiting

commercial redistribution), the content remained open. Alternatively, Wiley (2015) considers increasing the degree of openness with the inclusion of the 5th dimension of openness - Retain which further expanded the 4Rs framework to 5Rs. Retention, pertains to the right to make, own, and control copies of the content.

With creative common open licenced conditions, Creative Commons (2016) stressed that lecturers are covered to share their resources, use other resources and redistribute to colleagues and students alike. However, misconception regarding 'openly licensed' content among lecturers abound, attributing shared content in the public domain as loosing up all of their rights to this material. The idea behind the emergence of open licences has been driven by a desire to protect a copyright holder's rights in environments where digitized content can be easily copied and shared via the Internet without prior permission of the original owner (Creative Commons, 2016). The Creative Commons licencing framework provides a legal mechanism to ensure that authors of materials can retain acknowledgement for their work while allowing it to be shared, restrict commercial activity if they wish, prevent people from adapting it if appropriate. Thus, an author who applies a Creative Commons (CC) licence to their work specifically seeks to retain copyright over that work, but agrees – through the licence – to give away some of those rights.

Hartnett (2017) stated five important attributes of Creative Commons (CC) as: first, the CC approach provides user-friendly open licences for digital materials and so avoids automatically applied copyright restrictions; second, the CC licences take account of different copyright laws in different countries or jurisdictions and also allow for different language versions; third, to make the licensing process as simple as possible for users, the Creative Commons site makes use of a licence generator that suggests the most appropriate licence based on a user's response to specific questions regarding how their work can be used; fourth, all of the CC licences include basic rights that are retained by the authors,

asserting the author's right over copyright and the granting of copyright freedoms and lastly, within this framework, the CC licences allow authors, in a user-friendly way, to grant other people the right to make copies of their work and, if they wish, to allow other people to make changes to their work without seeking permission.

The CC licences also allow users to apply some restrictions on these permissions, for example, requiring attribution of the authorship of the original work, or restricting reuse of the resource for commercial purposes. The issue of freedom and its definition has been widely debated since the advent of open licences, possibly most significantly in the free and Open Source Software environment. The CC licences are summarised in Figure 2.2;

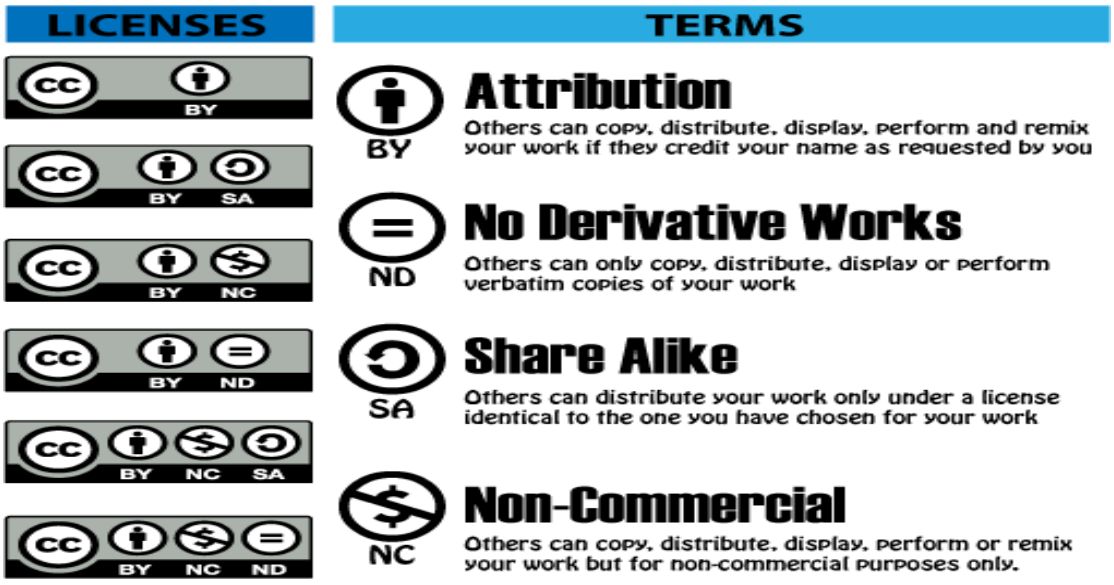


Figure 2.2: Creative Common Licence Conditions 1
Source: Creative Common Licences (www.creativecommons.org)

The CC approach provides user-friendly open licences for digital materials and is the licence condition that support open content movement which relegate copyright restrictions for content sharing. The popularity of CC licences has grown incrementally since its launch in 2002 and by 2006 it was estimated that 45 million web pages had been licensed with a CC licence (Kanwar & Mishra, 2017; Emarge Consultants, 2017).

The philosophy of Creative Commons was described by Liang (2004) as inspiring a free software movement with a believes that a large vibrant public domain of information and content is a pre-requisite to sustained creativity. There is a need to proactively enrich this public domain by creating a positive rights discourse among academics. That, the creative commons do this by creating a set of licenses to enable open content and collaboration, as well as acting as a database of open content. Creative Commons also serves to educate the public about issues of copyright, freedom of speech and expression and the public domain.

The CC licences take account of different copyright laws in different countries and jurisdictions and allow for different language versions. To make the licensing process as simple as possible for users the Creative Commons site makes use of a licence generator that suggests the most appropriate licence based on a user's response to specific questions regarding how their work can be used. Figure 2.3 described the licence conditions that fall within OER and those that are attached with conditions thereby making not OER.

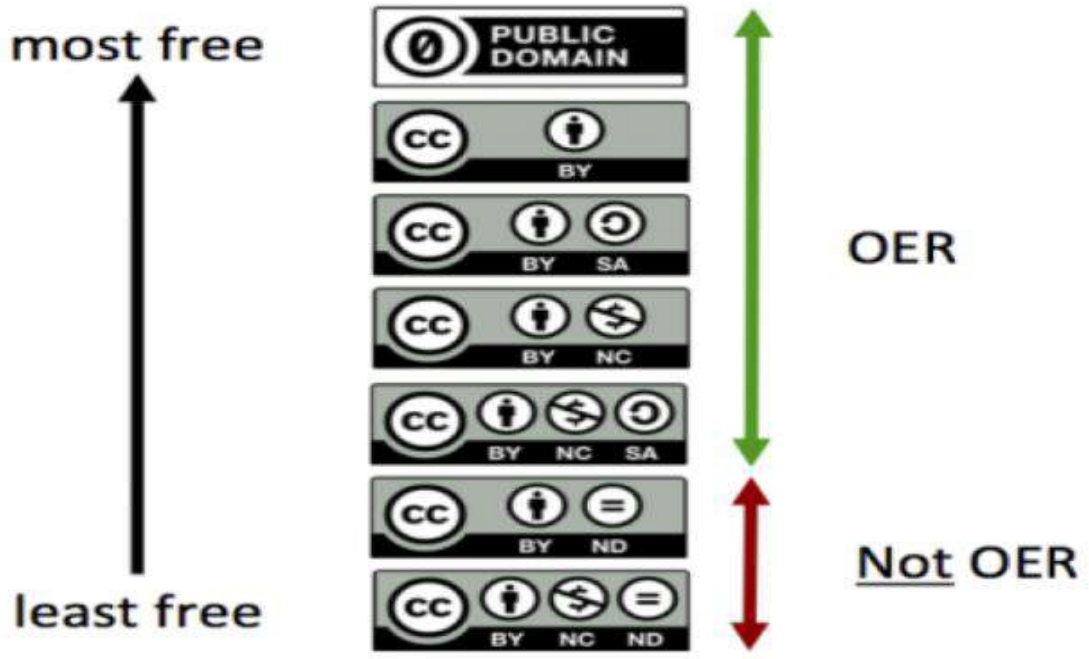


Figure 2.3: Creative Common Licence Conditions 2
Source: Creative Commons Licences (www.creativecommons.org).

2.1.6 Open Educational Resources (OER)

The Open Educational Resources (OER) movement originated from developments in open and distance learning (ODL) and in the wider context of a culture of open knowledge, open source, free sharing and peer collaboration, which emerged in the late 20th century. The concept of OER was originally coined during a United Nations Educational, Scientific and Cultural Organization (UNESCO) forum on Open Courseware for Higher Education in Developing Countries held in 2002. Subsequently, OER movement was brought to the awareness of the educational community by UNESCO (Hatakka, 2016). Subsequently, Massachusetts Institute of Technology (MIT) took the lead on OER movement and released their educational materials openly through the OpenCourseWare platform (Kanwar & Mishra, 2017).

The initial conception of OER was developed as: 1. Open Educational Resources are defined by Wiley (2006) as 'technology-enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes. 2. Their principal use is by teachers and educational institutions to support course development, but they can also be used directly by students. 3. Open Educational Resources include learning objects such as lecture material, references and readings, simulations, experiments and demonstrations, as well as syllabuses, curricula and teachers' guides.

Similarly, UNESCO (2012) described OER as the "technology enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes." Since then, the term OER gained popularity around the world and become the subject of heightened interest in policy-making and many initiatives have been implemented that have provided services and tools around OERs. These initiatives have

resulted in the development of repositories that collect and store educational resources for use by lecturers and students (Kelly, 2014). The services around OER environments are now moving toward collaborative functionalities and supporting the creation of teacher and learner communities.

It's worthy to note that academic lecturers are the prime movers of OER first, to explore the concept and then conceptualize its potential to contribute to improved delivery of higher education around the world. Kelly (2014) opined that the core of OER indicates that it is legal and then largely economic: it describes educational resources as openly available for use by educators and students, without an accompanying need to pay royalties or licence fees. The term OER is conceptualized as the open provision of digitized educational resources, enabled by ICTs for consultation, use and adaptation by a community of users for non-commercial purposes (Wiley, 2015). The digitized resources are shared via the Internet or using media such as disk-drives.

OER is largely synonymous with another term: Open Course Ware (OCW), although the latter may be used to refer to a specific, more structured subset of OER. An Open Courseware is defined by Hartnett (2017) as 'a free and open digital publication of high-quality university-level educational materials. These materials are organized as courses, and often include course planning materials and evaluation tools as well as thematic content. Kanwar and Mishra (2017) specified that the educational value of OER lies in the idea of using resources as an integral method of communicating curriculum contents (resource-based learning) while its transformative power lies in the ease with which such resources,

when digitized, can be shared via the Internet using licence as a key differentiator between an OER and any other educational resource.

Thus, OER is simply an educational resource which incorporates a licence that facilitates reuse, and potentially adaptation, without first requesting permission from the copyright holder. To this end, Mishra *et al.,* 2016) enumerated three principles of open educational resources as resources that should be shared either as hard or soft copies. This indicates that educational resources should be made available on the internet or via another form of digitized media so that material is easier to distribute and reuse with the least cost. This is supported by OECD (2016), as their definition of OER is a digitised materials offered freely and openly to educators, students and self-learners to use and reuse for teaching, learning and research.

In addition, Singh *et al.,* (2015) is of the opinion that the tools which are used to support open educational initiatives must be open source in nature, where the source code is available for use. Educational resources should be free and open to use. Jhangianiet *et al.,* (2016) stated that this allows users to collaborate, improve upon, share educational content and make the content more freely available and open to a global community under a licensing agreement, namely the creative commons license. Educational resources should be easily remixed and shared because, it is important that the content of OER is made open for editing to suits the needs of the educator, learner or institution. Jung *et al.,* (2017) define Open Educational Resources as digitized educational material which can be edited and expanded for other uses. Figure 2.4, illustrates the range of resources that are typically included under OER.

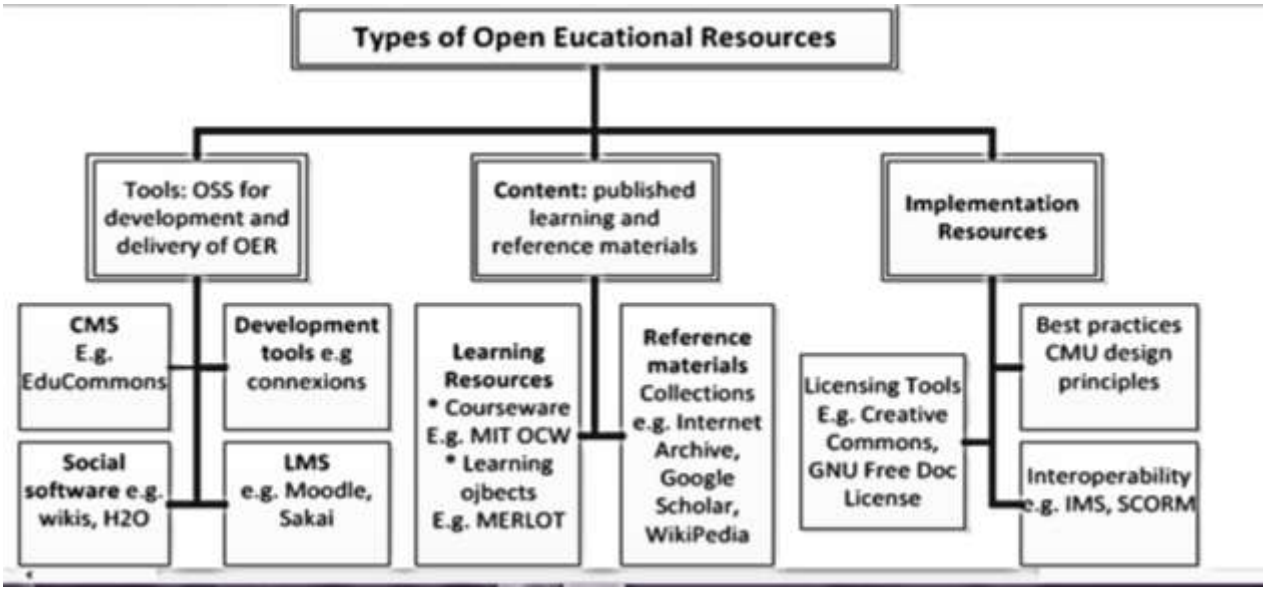


Figure 2.4: Types of Open Educational Resources
Source: Margulies, (2005).

Functions of OER

OER has a number of functions that include promoting lifelong learning, bridging the gap between formal, informal and non-formal learning and provide a platform for knowledge sharing between institutions and academics. Chen (2017) added that OER increases access and reduces the cost of teaching, learning and research resources, assumed interdisciplinary teaching and learning and promote resource collaboration among educators. Specifically, OER function to support lecturers' knowledge sharing, students autonomous learning and institutional resource collaboration. Thus;

Lecturers' knowledge sharing;

First, the option to download information as a core or supplemental teaching material, and the flexibility to localize the content for their own use is now possible (Annand & Jensen, 2017). This option allows educators to leverage localizing existing content without the need to produce content from scratch, thus, reducing cost, time and energy. Second, OER exposed educators to what colleagues in other sister universities are doing, and through observing others teaching practices, their own teaching can be improved. Third, resources

generated from OER repository are open for comments by educators by giving insight on how the content can be improved for effective instructional delivery.

Students autonomous learning;

Providing lecture materials publicly available on OER platform by lecturers has been shown to increase students autonomous learning, level of preparedness and commitment to learning (Jung *et al.,* 2017). Also, given the increased availability of high quality, relevant learning materials on OER repository, prospective students can choose the right programme of study since lecture materials for various programmes are available for choices to be made. OER support lifelong learning by providing opportunity to acquire high-quality knowledge without enrolling in a mainstream programme (Hilton *et al.,* (2016). Additionally, because OER removes restrictions around copying resources, it can reduce the cost of accessing educational materials for students and save parents from unnecessary expenditures accruing from purchase of proprietary learning resources. Lastly, the principle of OER that allow for adaptation of materials provides opportunity for students to be active participants in educational processes thus, supporting constructivist learning approach, where students learn best by doing and creating, not by passively reading and absorbing content.

Institutional resource collaboration;

Firstly, the presence of OER repository in a particular institution stimulate educators to provide resources for students and faculty to support learning and collaboration, attracting alumni as lifelong learners. Similarly, the number and quality of teaching materials made openly available to academic community for use and reuse help in raising its profile. Secondly, OER has potential to build capacity by providing institutions and educators access, at low or no cost, to the means of production to develop their competence in

producing educational materials and carrying out the necessary instructional design to integrate such materials into high quality programmes of learning.

2.1.7 National Universities Commission (NUC)

The National Universities Commission (NUC) was established in 1962 on the recommendation of the Eric Ashby Commission in 1959. The Ashby Commission recommended the establishment of a university in each of the regions and a national one in Lagos. In 1974, the NUC became a statutory body and the Decree 16 of 1985 further empowered the NUC. Currently, the vision of NUC is to be a dynamic regulatory agency acting as a catalyst for positive change and innovation for the delivery of quality university education in Nigeria (FME, 2017). The mission is to ensure the orderly development of a well-co-ordinated and productive university system that guarantees quality and relevant education for national development and global competitiveness.

Furthermore, the NUCs mission was translated in to the following mandates: approval of courses and programmes; determination and maintenance of minimum academic standards; monitoring of universities; accreditation of academic programmes; and provision of guidelines and processing of applications for the establishment of private universities. Though its mandate was essentially advisory at its inception, the functions of the NUC as a statutory body have been expanded in the last 50 years to include setting minimum academic standards, advising government on the establishment of private universities, and setting up visitation panels to universities (FME, 2017). With these mandates, the NUC is empowered to advise the universities in matters of academic quality and improving access to education. In line with these, NUC issued a policy guideline to all universities in Nigeria encouraging for the adoption of open educational resources (OER) in teaching and learning in Nigeria's higher education system.

The term OER was created in a meeting at UNESCO in 2002. Since then, the OER movement has progressed all over the world, and in 2012, COL and UNESCO organised the first World OER Congress (Bliss & Smith, 2017). This resulted in the 2012 Paris OER Declaration, calling upon all countries to release teaching, learning and research materials developed with public funds under an open licence to allow their reuse, revision, remixing and redistribution without the permission of the copyright holders. The 2012 Paris OER Declaration defines OER as; teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. Open licensing is built within the existing framework of intellectual property rights as defined by relevant international conventions and respects the authorship of the work" (UNESCO, 2012).

OER declaration had challenged lecturers to increase access to teaching, learning and research resources by adopting resources shared as OER as an integral method of communicating the curriculum in educational courses. This has further challenged the traditional notion that a talking teacher is the most effective strategy for communicating curriculum. Thus, OER placed more focus on the design and development of high-quality resources as a strategy for building and assuring the quality of educational provision (Butcher, 2011).

2.1.8 OER in Nigerian universities

With OER declaration in 2002, scholars, funders and advocates have continued to promote OER as a potential answer to the numerous challenges facing higher education in Nigeria. Butcher (2011) argued that OER can reduce the cost of textbooks, reduce the cost of higher education by increasing its accessibility to more students. Similarly, Orr *et al.,* (2015) proclaimed that OER has the capacity to improve the quality of educational materials

resulting from collaboration and peer scrutiny and expand the reach, impact and brand competitiveness of different universities. In pursuing these ambitions, many top-ranked universities globally have developed platforms and repositories where lecturers can share their teaching and learning resources. For instance, the Massachusetts Institute of Technology provides access to almost all of its courses and associated materials to the general public, Harvard University offers several free courses online, and Yale University provides free access to a number of introductory courses (UNESCO, 2012).

With this development, Nigerian universities have complied with OER directives to release teaching, learning and research materials developed with public funds under an open licence to allow their reuse, revision, remixing and redistribution (OER Policy, 2017). The NUC advised the universities in matters of academic quality and improving access to educational resources to fast-track the implementation of OER policy (FGN, 2017). With this policy, Higher Education regulatory agencies and all universities in Nigeria shall be committed to the philosophy of OER in raising awareness, building capacity and fostering positive attitudes among educators, learners and researchers, regarding the acceptance and use of OER, with a view to enhancing quality and equity in education.

For quality and equity in education to be achieved, Annand and Jensen (2017) argued that lecturers who are the developers of teaching resources should accept and use OER as a culture not just a one-time approach to resource sharing. This development is not cumbersome for lecturers considering their expertise in developing programmes, course materials either in digital or non-digital form. In compliance with OER policy implementation, Nigerian universities have developed platforms and repositories and instruct lecturers to share their teaching and learning resources (OER Policy, 2017).

2.1.9a OER creation cycle

OER creation cycle was proposed by Hodgkinson-Williams and Arinto (2017) encompassing 10 distinct activities called the "10Cs" – creation, curation, circulation, certification, etc.) as a framework for OER creation. This model is based on a common conceptualisation activity, followed by three distinct phases: a creation, use and adaptation phases in Figure 2.5.

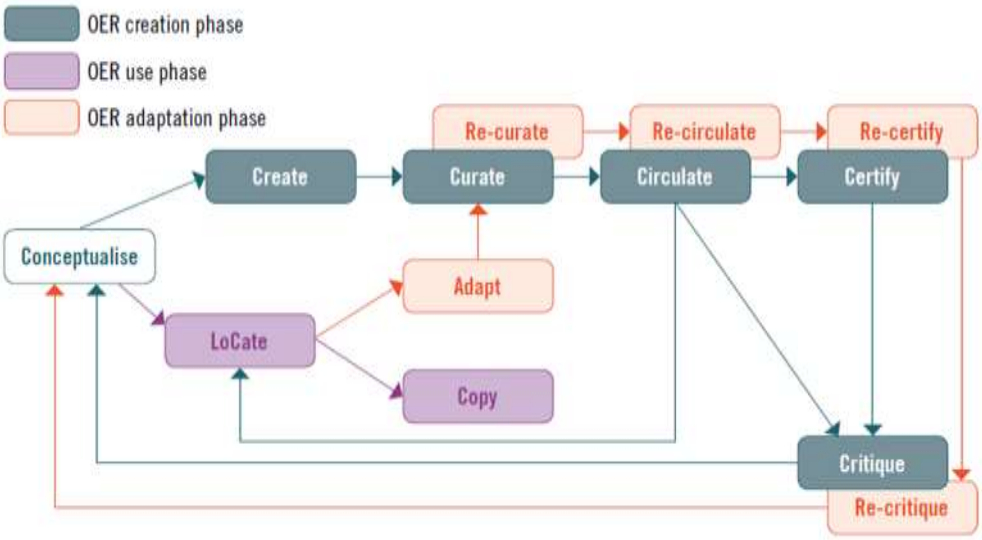


Figure 2.5: OER Creation Cycle
Source: Adapted from Walji and Hodgkinson-Williams (2017a).

The conceptualisation activity includes planning what OER and which pedagogical strategies might be most suitable in a specific context; it is implicit in the OER creation, use or adaptation phases. Hodgkinson-Williams and Arinto (2017) noted that the creation phase refers to the development of original materials by the lecturer, either as a "self-use" of existing materials or as "born open" OER (i.e., developed with the view of being shared freely and openly). In order for these materials to be made publicly available, they need to be curated; that is, they need to be hosted on a publicly accessible platform with sufficient

descriptive information and appropriate open licensing (e.g., Creative Commons) for them to be easily found through internet search tools and legally reusable (Green, 2017).

Further circulation amongst potential users of the OER is required to raise awareness of the existence of the OER (e.g., via social media, OER portals), which are then ideally certified through some type of quality assurance mechanism, either by the OER creator, their peers or the university OER management. Wiley (2017) emphasised that best practice requires that OER be critiqued to ensure that user feedback informs subsequent phases of conceptualisation. The use phase refers to finding OER (artificially referred to as "loCate" in this phase) so that it can be used in its original form (i.e., copied) in other contexts. As Walji and Hodgkinson-Williams (2017) put it, this use phase, where OER are used "as is", implies a finite path as no subsequent OER are created from this activity. The adaptation phase refers to OER being customised or combined with more than one set of OER in order for these derivative OER to be re-curated, re-circulated, re-certified and re-critiqued.

2.1.9b OER sharing choices

Resource sharing via OER is a continuous process and require a number of choices most appropriate to lecturer's comfort and accessibility. Once a resource has been developed and an open licence selected, the resource was shared in an online repository for others to access it. There are various choices with regard to where these resources could be shared. For instance, the use of institutional repository require that universities set up their own collections and making them available online as OER. If the developer works in a particular university, the expectation was that OER developed under the auspices of that institution should be shared within their repository. The guidance on how to share reside with the repository administrator in which a user identification is created and access granted for uploading resources (Annand & Jensen, 2017).

The use of open repository also welcome contributions from multiple locations across the globe. For example, JORUM (www.jorum.ac.uk/share) welcomes submissions that support the British curriculum at higher education levels. OER Commons has a facility (www.oercommons.org/contribute) to allow users to contribute materials. Generally, open repositories require the person submitting the resource to register and log in before uploading the resource. They will also require information about the resource to allow it to be catalogued and tagged. This is necessary in order to allow search facilities to find it. The submitted resource was vetted by a review team to ensure quality before being added to the repository's database.

Similarly, collaborative OER developments have specialized sites that support the development of OER within their online environments. They can then automate processes such as acquiring a Creative Commons licence and adding the resource to the database. One such example is Connexions (http://cnx.org), which allows teams to develop modules of learning on their site. Users open an account, develop the materials online, and then publish them once they are satisfied. WikiEducator (http://wikieducator.org) uses a similar method to allow educators to develop teaching materials collaboratively online.

It is worthy to note that social networking has also opened new possibilities for publishing OER online. A site such as Flickr (www.flickr.com) allows its users to publish photographic materials with Creative Commons licenses, while YouTube (www.youtube.com) allows the same for digital video materials. Networks like Twitter and Facebook can be used to spread awareness of the materials posted on the Internet by sharing the links.

2.1.9c OER search strategies

Given the available sharing choices for lecturers, co-lecturers and students who are considered primary consumers of resources shared via OER repository are left with how to

access the resources. Thus, locating the shared resources may be too cumbersome because, new resources are continuously added to the global body of OER. The OER repository continue to expand in terms of content, structure and complexity and that require search strategies. That include using a specialized OER search engine such as Google and Bing are generally used for searching content online. There are a number of specialized search engines that search specifically for OER such as Global Learning Objects Brokered Exchange (GLOBE) Alliance, Folksemantic, DiscoverEd, Creative Commons and Open Courseware Consortium.

Locating a suitable OER repository is another search strategy where content developers access the major OER repositories that are institutionally based, focusing on the materials released by that organization. A famous example is the Massachusetts Institute of Technology Open Courseware Repository (MIT OCW). Some repositories, such as MedEd PORTAL, have a specific subject focus, in this instance, medical photos and multimedia. The few significant OER repositories includes: OpenLearn, MedEdPORTAL, MIT OCW, China Open Resources for Education (CORE), AgEconSearch (agricultural focus), and Teacher Education in sub-Saharan Africa (teacher education focus).

Additionally, using OER directory sites that have a search facility whose results point to places elsewhere on the internet where resources match search criteria. They themselves do not act as a repository, but have identified quality resources and store them in a database of web links. Their databases usually have a particular focus. In the case of OER Africa, for example, they highlight quality resources developed in and about Africa and here are just a few of them as OER Commons: www.oercommons.org., Commonwealth of Learning: www.col.org/OER, and OER Africa: www.oerafrica.org.

2.1.9d Structure of OER management system

OER management systems are aimed at raising the availability and accessibility of OER in the universities. Within the framework of this structure, three types of user roles are apparent. For instance, resource users which include lecturers and students in universities, resource administrators who are responsible for collecting, cataloguing, creating, managing the resources, and system administrators who manages the web-based systems. Figure 2.6. illustrate the structure and functions of the OER management system.

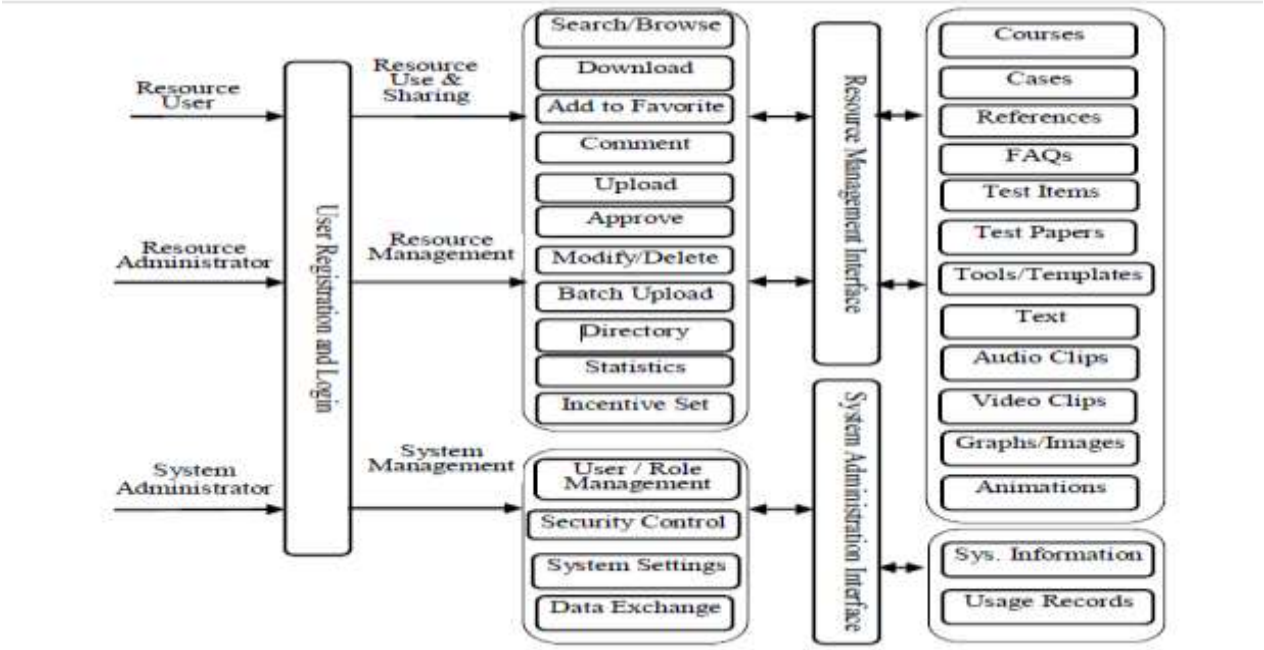


Figure 2.6. The Structure of OER Management System
Source: Mtebe and Raisamo (2014a)

Generally, apart from the user roles, the OER system itself consists of three layers: 1. The portal layer. 2. The management module layer and 3. The repository/data layer. The portal layer: serves the functions of website management and user registration and sign in is taking place. The Management module layer which includes three types of functional modules as follows; Module A: Resource Using and Sharing; within this module, lecturers and students are able: to browse resources according to the subjects and types, to find resources in the fields of title, keywords, abstract and author through simple and advanced search, to download the resources and upload them with the metadata editing, to add resources to their

favourite folders which can be edited by users; and to score the resources and write comments on the resources.

Module B: Resource Management; with this module, resource administrators are able: to review and approve the resources which are uploaded by instructors and students, to modify and delete the resources and their metadata stored in the repository, to batch the uploaded resources to the repository using Microsoft Excel format files or DAT format files to store the metadata, to set up and adjust the directory trees of classification and type. The default of the classification is the subject category; to conduct statistical analysis of the resources stored and used, and to set up an incentive mechanism using virtual currencies gain. That includes setting the name and the value for each scale of the virtual currencies, and setting the value gain of the virtual currencies for each action operated by users, such as click a resource for browsing, download a resource, upload a resource, etc.

Module C: System Management; With this module, system administrators are able: to use privileges and roles to control access of users to functional modules. A privilege can be assigned to a user or a role to conduct a specific operation, such as browsing or editing resources, reviewing and approving the resources; to set up IP address range inclusions or exclusions filters to control the access of different users and roles; to set and manage weblogs, set backup options, set the open access options of resources, define initial default values for the system information, such the title of user, affiliation, etc.; and to set the file formats and interfaces for exchanging data and resources with other systems. The repository and data layer include a resource repository and database. In the resource repository there are courses and learning materials. These include cases, references, frequently asked questions, test items, test papers, learning tools and templates, and elemental units (stored

as the format of text, audio clips, video clips, graphs/images and animations). The database stores the systems information and usage information of resources.

2.1.10 University lecturers' roles

University lecturers are academics with ranks starting from Graduate assistant, assistant lecturer, lecturer II and I, senior lecturer, associate professor, professor. These academics are subjected to high level training in their respective disciplines by acquiring higher degrees, attending workshops, conferences, writing articles for journal publication and giving scholarly presentation to academic community. Aside the training, lecturers are responsible for conducting research, teaching students, fulfilling leadership and service roles within the university and apply their knowledge in addressing societal challenges (Kiamba, 2016). The balance among teaching, research, and service, however, differs widely across institutions and the university condition of service. Though, the roles of university lecturers are closely tied to the central functions of higher education with specific accomplishments in teaching, research and community service.

The teaching role of university lecturers is to address the vision and mission of the institutions by imparting basic and applied knowledge to students, guide them on how to achieve excellence in their studies and train them to be morally upright. In doing that, lecturers develop contents based on Benchmark Minimum Academic Standard (BMAS) and follow developments in the field to sharpen their knowledge base and align content to students' needs. Waring and Evans (2015) remarked that for teaching to be effective, lecturers should place more emphasis on effective pedagogy and an increased attention to the learning needs of students. Thus, the learning needs of students combines students' mastery of content, their abilities to apply the knowledge learnt and the development of skills necessary to undertake a career position in their chosen field.

Aside the teaching role, lecturers engage in conducting research thereby contributing to the knowledge base of the discipline. The research role involves conducting empirical studies that can be accomplish within a minimum time. These researches could be self-sponsored by the lecturers themselves, by the host institution while in some instances by tertiary education trust fund (Tetfund) under the institutional based research (IBR) intervention. As with IBR, lecturers with active research proposals will make a submission through their university research and development directorate for onward transmission to Tetfund for sponsorship.

Furthermore, apart from these sponsorship openings, research-oriented lecturers often participate actively in attracting external research grants from companies, organizations and agencies to their universities to conduct award winning research projects. The rewards for engaging in research role include promotion, appointment and national and international recognition. However, achieving these rewards are based on the extent to which lecturers contribute to their disciplines through publishing articles, presenting research findings and disseminating their work to external audiences through OERs (OECD, 2016).

The service roles of university lecturers include serving as internal committee membership, advisory boards, mentoring younger academics, advising students and occupying administrative offices as directors, coordinators, deans, head of department and examination units. In addition, Cardoso *et al.,* (2016) opined that lecturers service roles are also expected to be extended to immediate communities by addressing local needs. In addressing local needs, lecturers' experiences and research findings are extended to the community in need specifically by participating in employee training, conducting workshop to identified community members and accepting invitations for expertise interactions. Thus, the lecturers service role through outreach and demonstrations of responsiveness to local

needs are highly valued and strengthen university-community relationship (Waring & Evans (2015).

2.1.11 Lecturers' acceptance of OER

Researchers have continued to find evidences regarding lecturers' acceptance of OER in their academic practices. Although, significant evidences indicated that lecturers frequently use search engines such as google, Mozilla and Wikipedia to identify suitable resources on the Web, which they use by way of cutting and pasting to create a whole new resource for their lectures. Kurelovic (2016) remarked that these practices are considered illicit because prior permission has not been sought from the original owner and copyright laws violated are punishable by the court of law if sued by the original author. To avert these illicit practices of copying and pasting, Mishra, *et al.,* (2016) specified that OER came to rescue lecturers by making the resources in any medium available for use, reuse, remix, retain and redistribute.

Now OER as Mtebe and Raisamo (2014b) mentioned, remain a public domain where academics create and upload teaching and learning resources for colleagues and students to download for their use. However, many lecturers are now cautious to accept OER as a sharing platform with enormous concern for losing rights and control of their materials, and thus, forgoing possible financial benefits (Kiamba, 2016). Similarly, Percy and Belle (2016) enumerated other concerns that are tied to quality judgments of the shared materials by colleagues and students who are primary consumers of the resources. To address these concerns, Liebenberg *et al.,* (2018) suggested the use of unified theory of acceptance and use of technology (UTAUT) model with four constructs (performance expectancy, effort expectancy, social influence and facilitating conditions) to ascertain their influence on lecturers' acceptance and use of OER.

For example, performance expectancy seeks to find the extent to which lecturers believe that sharing resources via OER will help them to enhance their teaching performance. Accepting OER as a digital content sharing domain and accepting to share resources in OER domain are issues of concern among researchers Nayantara (2018) and Padhi (2018). This is partly due to the fact that the practice with OER require some form of technology related skills and exposure to OER environment. However, with strong believed that OER will enhance lecturers' academic career in terms of knowledge sharing, promotion, accreditation and popularity, its acceptance will not suffer much delay. It is worth noting that what OER can do regarding advancing lecturers' career cannot be achieved with the current teaching practices.

Similarly, Zhang and Li (2017) opined that as university reputation grow in the global OER map, lecturers' reputation grows exponentially. Effort expectancy is another determiner for lecturers' acceptance to share OER and is associated with the degree of ease in using OER repository. Lecturers believed that OER environment is computer based and therefore, require skills to navigate while uploading resources. In connection to OER environment being computer based, it requires internet connection to be able to use it. With these demands, lecturers who are unskilled to use computer and the internet and those who nurture concern for buying data plan for internet service may hold on to their old paradigms. Because, the use of OER would not be free of effort and that is enough to avert acceptance. In contrast, what facilitate acceptance is the level of easiness and flexibility of sharing content via OER repository and using the 5Rs (Retain, Reuse, Revise, Remix, and Redistribute) model which clarify some of the rights that can be incorporated with OER development and use (Wiley, 2015).

Furthermore, a social influence as a determiner for lecturers' acceptance of OER considers the opinion of peer lecturers as a precondition for acceptance. This is so because lecturers

do not operate in isolation, they work in a community of friends and associates and the opinion of their colleagues tend to influence their routine practices. Attuquayefio and Addo (2014) noted that the influence of social group surrounding a particular lecturer who nurture a believe that he or she should use OER is a strong influencing factor regarding acceptance. Though social influence does not stop at the opinion of peer lecturers, it also includes university management, senior colleagues, faculty and students who collaboratively expects each other to accept and use OER.

Acceptance of OER as opined by Venkatesh *et al.,* (2003) is influenced by facilitating conditions which refers to the extent to which an individual lecturer is satisfied with the institutional framework, policies and technical infrastructure to support their use of OER. Institutional framework is a set of formal university laws, regulations, procedures and informal norms that describe and support lecturers' acceptance and use of OER. To determine acceptance of OER, Wiley (2015) maintained that lecturers need to validate the institutional framework as a facilitating condition for its acceptance. Furthermore, Padhi (2018) added technical infrastructure which represents the university's entire collection of hardware, software, networks, data centres, facilities and related equipment available to facilitate acceptance of OER. Similarly, the availability of OER administrators, technical assistants and related support services within the university facilitate acceptance of OER.

2.1.12 Lecturers use of OER

Creating and uploading OER in the university repository by lecturers is one aspect of the world OER declaration and OER policy implementation. The second aspect is the use of the shared OER by lecturers, colleagues and students. According to Wolfenden *et al.,* (2017), Creating and uploading OER in the university repository should be commensurate with downloading and use by lecturers and students alike. Waring and Evans (2015) emphasised that users of OER can modify the resources to meet their needs; however, this

requires paradigmatic changes towards a more open, participatory, collaborative, creative and sharing culture. OER use is an umbrella term covering all the activities of utilizing the shared OER and the creation of new OER from the existing ones.

OER use refers to the range of activities involved in reusing, remixing, revising, retaining and redistributing other people's OER so as to incorporate them into one's teaching materials (De-Oliveira *et al.*, 2017). This use is made possible by the fact that those publicly available materials have been openly licensed, and can therefore be legally appropriated. OER *creation* refers to activities in which lecturers create teaching resources with an open licence and share them on a digital platform or website for public consumption. These resources could be the intellectual product of one person, or include other OER that have been incorporated into them through revision or remixing. OER creation and use has been graphically illustrated in Figure 2.7.

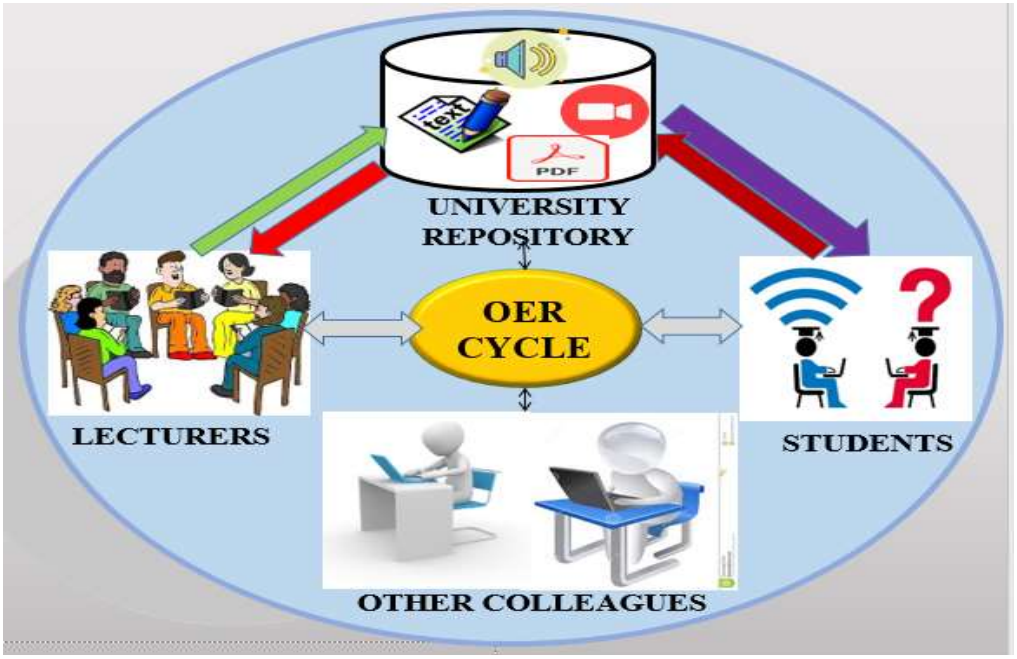


Figure 2.7: OER Creation and Use by Lecturers and Students
Source: Researcher

With the development of OER platforms and repositories by the universities in Nigeria, utilization is yet to become a normative practice across all faculties and disciplines (Percy

& Belle, 2016). The reasons for why academics have yet to engage with OER is still unknown and had remained a serious concern for university administrators who are saddled with the responsibility to ensure OER policy implementation. Nor is it clear from the OER literature how the departments and faculties form part of lecturer's "world view" within which they operate might shape their OER utilization. It is based on this premise that the researcher selected the four constructs (performance expectancy, effort expectancy, social influence and facilitating conditions) of unified theory of acceptance and use of technology (UTAUT) model to determine lecturers use of OER.

2.1.13 Lecturer's attitude towards knowledge sharing on OER

For OER, attitudes refer to the degree to which a lecturer has a favourable or unfavourable evaluation of OER. Attitude is determined by three components: attitude toward the behaviour, behavioural beliefs and outcome evaluation. The attitude toward the knowledge sharing refers to a lectures' judgement that sharing is generally good or bad (Daud *et al.,* 2015). Attitudes toward sharing are also determined by beliefs about that sharing. Beliefs are formed by lecturers' prior life experiences, pedagogical and computer skill and familiarity with internet environment. To measure the strength of a lecturer's belief, they were asked to indicate the likelihood that knowledge sharing will result in a given outcome. The outcome evaluation is the total set of positive or negative consequences that may be associated with sharing (Ajzen & Fishbein, 1980).

Lecturers have certain beliefs and attitudes about OER and these can influence their acceptance and use of OER. Attitude relates to the thinking and feelings of the university community in which lecturers find themselves. Jurado and Pettersson (2018) stated that attitude influences an individual's choice of action and response to specific stimuli. This is because, lecturer's behaviour is determined by their behavioural intention toward knowledge sharing on OER. Behavioural intention refers to the motivational factors that

influence knowledge sharing where the stronger the intention to share, the more likely that knowledge was shared (Ajzen & Fishbein, 1980). Attitudes are latent and not directly observable, but they are revealed by actions and behaviours that are observable. Attitude to OER and attitude toward knowledge sharing on OER is facilitated by the culture, values, goals and practices of universities which can shape acceptance and use in quite different ways (Reed, 2012).

Similarly, Rolfe (2012) added that these features encompass the social and cultural worlds in which the lecturers operate and deal with questions regarding OER. For example, attitude towards OER refers to lecturers' personal capacity to choose a course of action which may or may not include OER acceptance and use. Relating these to North-East universities, attitude to knowledge sharing as a culture on OER domain is now gaining ground among lecturers. Conversely, University culture which may shape lecturers' attitude to OER varies according to multiple variables, including governance style, level of lecturers' personal autonomy, adherence to OER policy implementation and level of lecturers' generic ICT skills that will facilitate the use of 5Rs.

OER scholars Zagdragchaa and Trotter (2017) acknowledged that lecturers' acceptance to engage with OER may be influenced by their prevailing attitude and dispositions concerning the sharing of teaching resources. In the same way, Jurado and Pettersson (2018) enumerated social customs, collegial expectations and disciplinary norms that can cue the behaviour of academics concerning OER, and which academics themselves either reinforce or resist. For some lecturers, their social and cultural context will play a key role in determining whether they develop a positive or negative attitude necessary to engage in OER activity while others, however, may disregard these conditions and base their decisions on their values or personal concerns.

2.2 Theoretical Framework

The theoretical position of this study are the Unified Theory of Acceptance and Use of Technology (UTAUT) model developed by Venkatesh *et al.,* (2003) and the Theory of Reasoned Action (TRA) developed by Ajzen and Fishbein (1980). The UTAUT) model is premised on four key constructs: Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions. These four constructs directly determine the Behavioural Intention to accept and use a particular technology. It was used to study information technology behaviour acceptance and it has a role of understanding the influential factors for accepting information technology in an organisation especially the influence of external variables on internal belief, attitudes and intentions.

The unified theory of acceptance and use of technology (UTAUT) model has been selected as an established theoretical position to guide the study and validate the theoretical claims inherent in the theory. Creswell and Creswell (2018) clarified that a theory is an interrelated set of constructs formed into propositions, or hypotheses, that specify the relationship among variables typically in terms of magnitude or direction. As a research discipline, the field of educational technology as an applied science uses theories from other disciplines to solve its related problems. One of the distinctive approaches has been to conduct behavioural research that has originated from the natural and social sciences, to explain and predict the variables of interest such as university lecturers' perspectives around OERs.

In addition, the UTAUT model explained how individual differences impact the acceptance and use of technology, particularly, the relationship among perceived usefulness, ease of use and intention to use as affected by age, sex and experience. For instance, the strength

of the relationship between perceived usefulness and intention to use varies, depending on age and sex. This theory holds that the independent variables performance expectancy, effort expectancy, social influence and facilitating conditions will influence or explain the dependent variables lecturers' acceptance and use of OER. As applied to this study, the constructs of UTAUT model were used as determinants of Lecturers' Acceptance, Use and Attitude to Open Educational Resources (OER) for Knowledge sharing in Selected Universities of North-East Nigeria. The research questions are based on the four constructs, and below is a detailed explanation of how these constructs interrelate with the dependent variables and clarify the research questions.

Performance Expectancy (PE); Refers to the extent to which lecturers believe that using OER will help them to enhance their teaching performance. PE is seen to be a strongest determiner for lecturers' acceptance of OER and subsequently use OER to ease their teaching job. This is because, as lecturers become more accustom to OER environment by downloading and reusing resources shared by other members of the faculty and sister universities, that will trigger acceptance generally and continued usage. PE is rated the strongest predictor of the intention to accept and use all technologies in both voluntary and involuntary settings (Venkatesh *et al.,* 2003). The research study seeks to establish the influence of Performance Expectancy on lecturers' acceptance to share OER in the selected Universities repositories of North-East Nigeria.

Effort Expectancy (EE); Refers to the extent of perceived easiness (Venkatesh *et al.,* 2003) associated with searching the relevant OER within the university repository, downloading, revising and using the searched OER. For the reason of workload attached to individual lecturer, EE was a source of concern for most, especially the technologically non-savvy ones. Therefore, ascertaining whether OER activities was free of effort to use and reuse will prompt its acceptance or otherwise. This impression will hold true for both high performing

and less performing, older and younger lecturers. The research study seeks to determine the influence of Effort Expectancy on lecturers' acceptance to share OER in the selected Universities repositories of North-East Nigeria.

Social Influence (SI); Refers to the extent to which lecturers perceive how important the opinion of their peer lecturers is if they accept and use OER (Venkatesh *et al.,* 2003). SI considers the opinion of peer lecturers as a precondition for acceptance. This is so because lecturers do not operate in isolation, they work in a community of friends and associates and the opinion of their colleagues tend to influence their routine practices. Thus, as lecturer continue to visit OER environment, they will see what their colleagues are uploading bearing their names and affiliation. This will pose a challenge and a feeling of inadequacy for lecturers whose resources are not yet on the university OER repository. It is worth noting that OER is a public domain where authorised participants including the university administration, co-lecturers and students visit regularly and judge each other's contribution. The research study seeks to establish the possible influence of Social Influence on lecturers' acceptance to share OER in the selected Universities repositories of North-East Nigeria.

Facilitating Conditions (FC); Refers to the extent to which an individual is satisfied with the institutional framework, policies and technical infrastructure to support the use of the innovation (Venkatesh *et al.,* 2003). Thus, for lecturers to adopt OER they need to validate the institutional framework as a facilitating condition for their acceptance and use. Furthermore, Padhi (2018) is of the opinion that technical infrastructure which represents the university's entire collection of hardware, software, networks, data centres, power supply, facilities and related equipment should be available to facilitate acceptance and use of OER. Similarly, the availability of OER administrators, technical assistants and related support services within the university will convince lecturers to accept and use OER. Moreover, Walji and Hodgkinson-Williams (2017) added socioeconomic and geographic

context in which students and lecturers are located as a facilitating condition for acceptance and use of OER. The research study seeks to establish the possible influence of Facilitating Conditions on lecturers' acceptance to share and use OER in the selected Universities repositories of North-East Nigeria. Figure 2.8 summarised the conceptual framework of the unified theory of acceptance and use of technology (UTAUT) model.

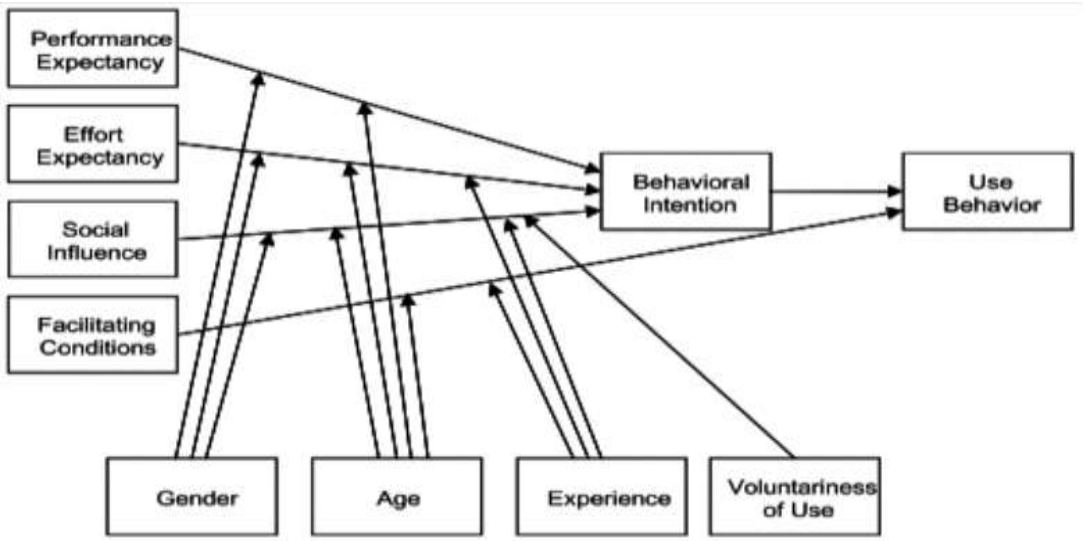


Figure 2.8: The UTAUT Model
Source: Venkatesh *et al.,* (2003).

The selection of this model for this study is justified by its global application in solving user acceptance and use of information system while equally incorporating a wide variety of explanatory variables from the main theoretical models developed explaining technology acceptance and use. In particular, Venkatesh *et al.,* (2003) carried out an in-depth analysis of literature on related topics and proposed a unified model that integrates the contributions common to the previous theories. Therefore, it is reasonable to expect that a model that integrates the most important contributions from other models to be superior to the previous models' explanation of technology acceptance and use.

In understanding the determinants that explain lecturers' attitude towards OER in university settings, the theory of reasoned action TRA was applied in the study which seek to understand the individuals' behaviour toward knowledge sharing on OER. The Theory of Reasoned Action (TRA) was developed by Ajzen and Fishbein (1980) based on the assumption that human beings are usually quite rational and make systematic use of the information available to them. According to this theory, a lecturer's behaviour is determined by their behavioural intention toward knowledge sharing on OER. Behavioural intention refers to the motivational factors that influence knowledge sharing where the stronger the intention to share, the more likely that knowledge will be shared. This intention is in itself determined by the lecturer's attitude toward sharing and subjective norms towards OER.

For OER, attitudes refer to the degree to which a lecturer has a favourable or unfavourable evaluation of OER. Attitude is determined by three components: attitude toward the behaviour, behavioural beliefs and outcome evaluation. The attitude toward the knowledge sharing refers to a lectures' judgement that sharing is generally good or bad (Daud, *et al.,* 2015). Attitudes toward sharing are also determined by beliefs about that sharing. Beliefs are formed by lecturers' prior life experiences, pedagogical and computer skill and familiarity with internet environment. To measure the strength of lecturer's belief, they were asked to indicate the likelihood that knowledge sharing will result in a given outcome. The outcome evaluation is the total set of positive or negative consequences that may be associated with sharing (Ajzen & Fishbein, 1980).

The subjective norm refers to a person's perception that important others desire the performance or non-performance of a specific behavior (Fishbein & Ajzen, 1980). It relates to lecturer's beliefs about whether co-lecturers, senior colleagues and mentors approve or disapprove of the knowledge sharing on OER or that they themselves have shared their own

resources on OER. Subjective norms are in itself determined by normative beliefs and motivation to comply. Normative beliefs refer to the customary codes of behaviour or larger cultural context that defined the routine practices of that group of people. While motivation to comply refers to the perceived presence of factors that may facilitate or impede performance of a behaviour. This theory can be summarized by the following equation: Behavioural Intention = Attitude + Subjective norms. Figure 2.9: shows a graphical illustration of the Theory of Reasoned Action.

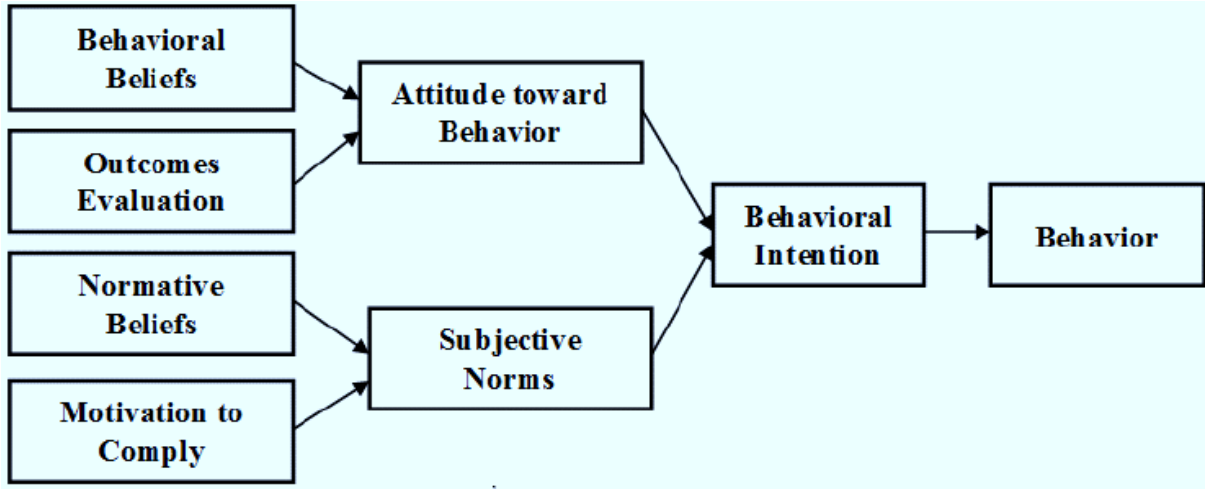


Figure 2.9: Theory-of-Reasoned-Action-TRA
Source: Ajzen and Fishbein, (1980).

Agreeing with TRA, the attitude of lecturers towards knowledge sharing on OER repository is determined by their beliefs on the consequences of sharing, multiplied by their evaluation of these consequences. Beliefs are defined by the lecturer's subjective probability that sharing knowledge on OER repository will produce specific results. Moreover, behavioural intention is also determined by the subjective norms that are themselves determined by the normative beliefs of an individual and by his motivation to comply to the norms. Motivation to comply with OER directives may be attributed to such factors as the pedagogical and computer skills of lecturers, the workload of individual lecturer, the availability of electricity and internet bandwidth and the university policy on OER. While the determinants

that influence knowledge sharing behaviours of lecturers in North-East universities can be speculated, it is important that a careful empirical study be conducted to examine the underlying antecedents of knowledge sharing.

2.3 Empirical Studies

2.3.1 Empirical studies on lecturers' acceptance of OER

Empirical studies on the acceptance and use of OER conducted across geographies has been reviewed to set the basis for understanding the areas covered and those that remained uncovered and how lecturers can take action by sharing their teaching and learning resources. The study was scoped at a time when the OER field is relatively emerging, however, supported by the National University Commission (NUC) Policy document as its main frame of reference. To understand the available literature on OER field at national and international level, it is important to gather empirical evidences that demonstrated its acceptability and level of usability among lecturers in North-East universities.

Salim (2012) conducted a study on the application of UTAUT model for acceptance of social media in Egypt. A survey methodology was used to gather data from eighty-seven respondents using the UTAUT model (Unified Theory of Acceptance and Use of Technology) representing performance expectancy, Effort expectancy, Social influence, Facilitating conditions and behavioural intention. Spearman correlation technique was used to analyse the data using SPSS software to examine the relationship among the UTAUT constructs. The findings revealed a significant correlation with behavioural intention so they accepted Facebook as influential factor. Also, the research finds age and gender do not impact on performance expectancy and even experience has impacted on effort expectancy. Additionally, the experience factor affects social influence. Furthermore, older people have neither got impact of using Facebook nor motivate them to participate physically.

Similarly, Mtebe and Raisamo (2014a) carried out a study on challenges and instructors' intention to adopt and use open educational resources in higher education in Tanzania. The study was conducted to ascertain which factors hinder instructors' adoption and use of OER at their institutions. Using UTAUT model, a sample of 104 instructors selected randomly from five institutions and tested against the research model by means of regression analysis. The results indicate that the research model was significant with the "Enter" method and was able to explain the variance in instructors' behavioural intention to adopt and use OER. The result also found that effort expectancy had a significant effect on instructors' intention to use OER. However, the three factors performance expectancy, facilitating conditions, and social influence did not have a significant effect.

Harmoniously, Mtebe and Raisamo (2014b) investigated perceived barriers to acceptance and use of open educational resources in higher education in Tanzania. A sample of 823 students selected randomly from five institutions was collected for testing against the research model by means of regression analysis. The research utilized both quantitative and qualitative methods to gather data from students and instructors at each institution. The unified theory of acceptance and use of technology (UTAUT) model was used as a basis for gathering quantitative data, while the qualitative data were obtained mainly through document review and semi-structured interviews. The result revealed that three factors, performance expectancy, facilitating conditions, and social influence, did not have a statistically significant effect on instructors' acceptance of using OER. The study showed that only effort expectancy had a statistically significant effect. The results of the qualitative aspect revealed that lack of access to computers and to the Internet, low Internet bandwidth, lack of policies, and lack of skills in creation and use of OER were the main barriers.

Kandiero (2015) examined educators' challenges and behavioural intention to adopt open educational resources at Africa University, Zimbabwe. A sample of 45 full time educators

were drawn using probability sampling procedure. The author explored the challenges and enablers experienced by Africa University educators who may potentially adopt OER, and ascertain barriers preventing them from adopting OER in mainstream teaching. Qualitative and quantitative research designs was adopted and the data was gathered by means of a survey questionnaire administered by the researcher. A modified version of the UTAUT model was used.

The data was analysed using Pearson correlation coefficient to establish the correlation amongst the research constructs (Effort Expectancy, Performance Expectancy, Facilitating Conditions and Social Influence). Similarly, regression and factor analysis were used to establish any possible effect of independent variables (Age, Gender, Experience, Voluntariness, Effort Expectancy, Performance Expectancy, Facilitating Conditions, and Social Influence,) to the dependent variable (Behavioural Intention). Descriptive statistics (means and frequencies) was applied to the demographic data (age, gender, experience).

Key findings indicate that Performance Expectancy, Effort Expectancy, Social Influence have a statistically significant positive influence on the educators' behavioural intention to adopt and use OER. However, Facilitating Conditions did not yield a statistically significant influence on the behavioural intention and this was interpreted to mean Africa University educators are satisfied with the current resources and infrastructure in place. However, educators felt Institutional Support in the form of institutional OER supportive policies, official OER project enactment, and OER related incentives needed attention. Also, significant differences were found in the barriers which potential users of OER identified as either limiting to potential use of OER, or negatively affecting their intention to use OER. These barriers include open licensing knowledge; institutional support; follow up training sessions; relevance, reliability and adaptability of OER.

Hatakka (2016) conducted a study on educators' acceptance of OER using the methods of interviews, questionnaires and observations of teachers and content developers from Bangladesh, Sri Lanka and users from UNESCO Open Training Platform. Findings indicated a lack of infrastructure for proper implementation of OER in developing countries. While Hilton (2016) summarized factors that affected the acceptance of OER in Africa as culture issues and pedagogical localisation, incentives for faculty members, user behaviours and user support systems.

Zhang and Li (2017) carried out a study on the impact of online teaching experience on faculty members' perceptions about attributes of OER. The attributes of innovation theory were adopted as the theoretical base in the study and questionnaire survey was carried out at Zhejiang University (ZJU) in China. 360 faculty members from ZJU were randomly invited to complete a questionnaire. The results of data analysis found that only small portion of surveyed faculty members had online teaching experience and the large portions of participants indicated that they would be willing to share their educational resources on the ZJU website or on outside websites; majority of the participants tended to agree that there is a relative advantage and compatibility of OER to their profession, though they were more neutral regarding the complexity, trial ability and observability of OER; online teaching experiences significantly impacted faculty members' perceived trial ability and observability of OER.

Yogesh *et al.,* (2017) based their study on a critical review of the Unified Theory of Acceptance and Use of Technology (UTAUT). The study first formalized an alternative theoretical model for explaining the acceptance and use of information technology (IT) innovations. The revised theoretical model was then empirically examined using a combination of meta-analysis and structural equation modelling (MASEM) techniques. The meta-analysis was based on 1600 observations on 21 relationships coded from 162 prior

studies on IT acceptance and use. The SEM analysis showed that attitude: was central to behavioural intentions and usage behaviours, partially mediated the effects of exogenous constructs on behavioural intentions, and had a direct influence on acceptance and usage behaviours.

Similarly, Cox and Trotter (2017) investigated factors shaping lecturers' adoption of OER at three South African universities. The study employed a qualitative research approach through in-depth personal interviews with 18 respondents at three different universities which together broadly represent the characteristics of South Africa's university sector. Unique analytical tools– the OER adoption pyramid and OER adoption readiness tables – were developed to help with analysing and synthesising the data. Findings indicate that how OER adoption takes place at an institution is shaped by a layered sequence of factors infrastructural access, legal permission, conceptual awareness, technical capacity, material availability, and individual or institutional volition which are further influenced by prevailing cultural and social variables.

Kurelović (2018) carried out a study on Open Access Culture and Acceptance of Open Educational Resources in Croatian public universities using the sample of 427 respondents. Survey research design was used in the study and three hypotheses were raised and tested. The results of multiple regression analysis show that the proposed model with predictor variable "open access culture" has a significant prognostic value on the intention to use and the actual use of OER, with a stronger influence on the intention to use OER. Similarly, considering the individual influence of the components of the predictor variable, the open access culture at professional level has the strongest influence on the intention to use and the actual use of OER.

Padhi (2018) conducted a study on acceptance and usability of OER in Indian Higher Education using UTAUT Model. A cross sectional survey research design was used and the instrument for data collection was the questionnaire administered through Google platform. The questionnaire was sent to 800 teachers of 22 universities in India. Correlation and Regression analysis were used to analyse the data. The results indicate that performance expectancy and effort expectancy positively impact on intentions to use OER. Therefore, the two hypotheses are supported. The results indicated that social influence and facilitating conditions do not have positive effect on intention to use OER. Therefore, the two hypotheses are not supported.

Wilson (2018) undertook a four-month research on adopting OER at two higher educational institutions from South Africa and the United Kingdom. Survey research design was employed through the method of interviewing some participants in the institutions which delivered distance-learning courses based on the OpenLearn environment. The discussion covered access to education, to information and communication technologies (ICT), and the influence of government policy. The results show that OER alone would not solve all of the problems related to the availability of resources. If infrastructure and facilities were not enough to access the Internet, using distance-learning resources would not be possible. Even in the United Kingdom where access to ICTs was more prevalent, OER should also be made more available.

The study of Liebenberg *et al.,* (2018) determined the applicability of the Unified Theory of Acceptance and Use of Technology (UTAUT) model within a South African higher education setting and to clarify the factors that are influencing students' intentions to make use of two digital technologies: an eBook and SLMS. A survey research design was used with a sample of 738 ICT students completed a questionnaire to gauge their responses to Performance expectancy (PEx), Effort expectancy (EfEx), Facilitating conditions (FC),

Self-efficacy (SE), Anxiety (Anx), Attitude towards using technology (ATT) and Behavioural intention (BI). Statistical analysis used was the structural equation modelling and the goodness-of-fit test which indicated that the model was supported by the data. PEx, FC and EfEx showed high practically significant relationships with BI. SE and ATT as mediators of the model are confirmed, however gender as moderator did not reflect the original findings of UTAUT.

Apparently, these studies have failed to recognise OER as a knowledge sharing platform and lecturers' behavioural variables such as attitude and motivation to share OER are rarely examined. Indeed, the few studies reviewed are foreign, little or none have been conducted within the geographical shores of Nigeria. This indicates the need for this study in order to validate the earlier findings and establish an empirical standpoint regarding lecturers' acceptance and use of OER in Nigeria.

2.3.2 Empirical studies on lecturers' use of OER

Kurelovic (2016) carried out a study on the advantages and limitations of usage of open educational resources in small countries. The study was conducted at four public institutions of higher education in Croatia using a descriptive survey questionnaire distributed via mailing lists to a sample of sixty-four respondents. The questionnaire was created in Google Forms containing statements with answers on 5-level Likert type scale. Data was analysed using descriptive statistics and a hypothesis testing was done using nonparametric Mann-Whitney U test. The results show that only twenty percent of the respondents have their teaching material accessible on a public web (web pages of institutions of teachers, blogs, document exchange services, social networks), while seventy percent of the respondents answered that their teaching material was accessible in digitized formats only to students who are attending classes. The result indicated that respondents are familiar with open educational resources and Creative Commons licenses. There are no significant differences

between attitudes towards Open Educational Resources among academic titles. Similarly, there is no significant difference in the availability of teaching materials.

Hatakka (2016) also conducted a similar study with the methods of interviews, questionnaires and observations of teachers and content developers from Bangladesh, Sri Lanka and users from UNESCO Open Training Platform. Findings shown that lack of infrastructure was one of major obstacles that need to be overcome if the usage of open content should increase in developing countries. The problems regarding the obstacle included lack of access to computers and Internet, poor bandwidth, and unreliable infrastructure.

Percy and Belle (2016) explored the barriers and enablers to the use of open educational resources by university academics in Africa. The sample consists of six hundred and ninety three academics from East, West and Southern Africa using convenient sampling. Information was gathered by means of a survey questionnaire. A modified version of the Unified Theory of Acceptance and Use of Technology model was used to identify the influence of certain factors on a user's intention to adopt OER. Some of the key findings indicated that Performance Expectancy and Effort Expectancy have a positive effect on a user's Behavioural Intention to use OER, and the latter has a strong influence on the Actual Use of OER. Facilitating Conditions do not have a statistically significant impact.

Ozdemir and Bonk (2017) explored the college teachers' awareness and use of open educational resources (OER) as well as their perceptions of its potential opportunities and challenges for teaching practices. This study utilized a questionnaire and follow-up semi-structured interviews of ninety-nine online respondents. To further evaluate and understand the survey data, descriptive statistical analyses in SPSS were calculated including the means, standard deviations, and frequencies of the responses. Findings showed that teachers

are aware of OER to a certain degree; however, a misunderstanding exists between digital educational content on the Internet and openly licensed content compatible with the OER definition. Lack of knowledge regarding licensing mechanisms of OER is a major issue among teachers. Whereas, teacher perceptions that the use of OER leads to improvement in student performance is highly beneficial, the time required to search, select, edit, and apply OER was discovered as the greatest challenge to OER adoption and utilization.

De-Oliveira *et al.*, (2017) conducted a study on the use of open educational resources (OER) for higher education instructors in the Global South (South America, Sub-Saharan Africa, and South and Southeast Asia). The study is based on a quantitative research survey of randomly selected instructors at higher education institutions in nine countries (Brazil, Chile, Colombia; Ghana, Kenya, South Africa; India, Indonesia, Malaysia). The survey addressed the personal demographics, infrastructure access, institutional environment, instructor attitudes and open licensing. Survey responses were correlated for analysis with respondents' answers to the key question of the survey: whether they had ever used OER or not.

Findings indicate that on the average respondents have used OER, a rate slightly differentiated by region. A number of variables were associated with varying levels of OER use rates – such as instructors' country of habitation, level of digital proficiency, educational qualification, institutional position and attitude to education – while many others were not, such as instructors' gender, age or perception of their institutions' OER-related policies. For respondents in the Global South, OER use is predicated upon instructors enjoying a certain minimum level of access to information and communication technologies infrastructure – especially hardware (computers, mobile devices, etc.) and internet connectivity (broadband, Wi-Fi, etc.) – which, once achieved, can be described as an enabling factor for OER engagement, but not a motivating factor. Beyond that minimum,

increased internet speeds, lower internet costs and greater diversity of technical devices do not seem to lead to ever-increasing OER use rates.

The study of Wolfenden *et al.,* (2017) examined the use of open educational resources (OER) in six teacher education institutions in three contrasting East African settings – Mauritius, Tanzania and Uganda – all of which had previous engagement with OER initiatives. Drawing primarily on interviews with teacher educators. The study takes a sociocultural approach, paying attention to the practices of teacher educators, the context and culture of the teacher education institutions within which they work, as well as the national policies relevant to these institutions. Surveys were sent to academic staff at each of the participating institutions who were involved in curriculum development work involving OER. From the respondents, selected individuals were asked to participate in semi-structured interviews concerning OER and their pedagogical practices.

A survey was completed by teacher educators along with in-depth teacher educator interviews and institutional stakeholder interviews. The results of the study indicated that teacher educators' understanding and use of OER is highly fragmented, with little traction at department or institutional level. At all the study sites, there was dissonance between the ways in which individual educators are using OER and the dominant institutional values and discourse. There were also numerous structural and cultural factors acting to limit agency with regards to OER use.

Hayman (2018) conducted a study on awareness and use of open educational resources (OER) in Ontario: A preliminary study of post-secondary educator perspectives. A volunteer sample of Ontario post-secondary educators currently teaching at publicly funded colleges and universities in Ontario were recruited through eCampusOntario communication channels in the spring 2018. Data were collected with an online survey

instrument and interviews were conducted with volunteer educators, one from a university and two from colleges. Each interview was approximately 30 minutes and the interviews relied on a series of open-ended questions. Quantitative data was analyse using percentages, mean and standard deviations while the qualitative data from transcripts were analysed using open and axial coding to derive a set of common themes related to course resource selection and awareness and use of OER. The findings indicated that educators were more aware of OER than open textbooks. College-level educators were generally more aware of copyright, licenses and open resources. The finding also revealed that participants would consider using OER related to their discipline. The result of the qualitative interview indicated that respondents are familiar with concepts and practices of OER use as part of their course selection routines and their attitude toward OER was positive.

2.3.3 Empirical studies on lecturers' attitude toward OER for knowledge sharing

Rolfe (2012) conducted a study on staff awareness and attitudes towards open educational resources as a benchmark for monitoring future progress. A sample of 50 Faculty staff were invited to participate in the study using a semi-structured interview and the questionnaires was distributed online via the tool Survey Monkey. Descriptive statistics were used to analyse the data. The result indicated that respondents were not familiar with the term OER but were familiar with open content repositories. The result indicated that a culture of borrowing and sharing of resources exists between close colleagues. Whilst staff would obtain resources from the Internet, they were reticent to place materials there.

Daud *et al.,* (2015) examined the knowledge sharing behaviour among academic staff at a Public Higher Education Institution (HEI) in Malaysia. The study identifies the components that influence knowledge sharing behaviour among academic staff and investigated the relationship between attitude, subjective norm, and perceived behavioural control with knowledge sharing behaviour. A total of 200 questionnaires were used for statistical

analysis. The results from a quantitative cross-sectional study indicated that attitude, normative norm and perceived behavioural control were found to have significant effect on knowledge sharing behaviour of academic staff. In contrast, comply norm was not significant on knowledge sharing behaviour.

Van-Acker *et al.,* (2015) presented a holistic perspective on the role of knowledge sharing self-efficacy in sharing Open Educational Resources using a survey of teachers in higher education. The study tests the relative importance of knowledge sharing self-efficacy, evaluation apprehension and trust in determining Dutch teachers' intention to share. The results showed that a large proportion of the Dutch teachers shared their OER, but that this sharing was limited to learning materials with low complexity (e.g., texts or images). Moreover, sharing occurred twice as much interpersonally than via websites. The hypothesis that evaluation of apprehension is significantly related to sharing behavior as well as the intention to share was not confirmed. Self-efficacy to share knowledge did, however, explain some of the differences in sharing behavior and in the intention to share of Dutch teachers, although the variables under study accounted only for a small amount of variance.

Panda and Santosh (2017) investigated faculty perception of openness and attitude to open sharing at the Indian National Open University of India (IGNOU). The authors report an analysis of the perception of the faculty of the Indira Gandhi National Open University about openness and their attitude towards sharing of resources in academic institutions. The methodology adopted was descriptive survey method and the data was collected through a structured questionnaire administered to the teachers and academics of IGNOU. The data was analyse using frequency and percentage. The results indicated that faculty had a positive inclination towards sharing knowledge and learning resources and believed that the learning resources should be made available free of cost to all. The results also indicated

that a large percentage of faculty members recognized that sharing knowledge and learning resources is helpful in research and teaching activities and are aware of the importance of sharing within the faculty. Similarly, regarding attitude of faculty towards sharing of knowledge indicated a significantly positive inclination towards sharing of knowledge and learning resources. This study is relevant with the present study in the aspect of faculty attitude towards knowledge sharing via OER and the methodology but the geographical variations and the choice of descriptive rather than inferential statistics is its major shortcomings.

Skaik and Othman (2017) explored the knowledge sharing behaviour and its predictors in United Arab Emirates Universities. Adopting a Theory of Planned Behaviour, the study used the quantitative approach employing an online survey using a questionnaire to collect data from academics in ten public universities in United Arab Emirates. Data were analysed using SPSS and PLS-SEM. The results revealed that academics' knowledge sharing behaviour is significantly influenced by explicit knowledge, tacit knowledge, and intention to share knowledge. The results showed that intention itself is significantly influenced by attitude, subjective norms, self-efficacy, but not influenced by controllability. Moreover, attitude is significantly and positively influenced by trust and reputation as motivators of knowledge sharing behaviour. Whereas, controllability is significantly and negatively influenced by lack of time and poor communication as barriers of knowledge sharing behaviour.

Jurado and Pettersson (2018) investigated lecturers' attitudes and utilization of open educational resources in higher education in Cuba, Guatemala, Peru and Brazil. A sample of 316 lecturers were used in the study. Survey method was adopted using a questionnaire about OER given on a five grade Likert scale. The data was analysed using percentage count. The result indicated that lecturers have a positive attitude about OER in all groups,

with the group in Guatemala more reluctant than the others to share their material. Also, lecturers utilized OER for sharing their contents and were prepared to make material of their own available to others.

The studies reviewed on attitude to OER and attitude to knowledge sharing on OER described the methodologies used by researchers in the development of a scale to measure attitude towards open educational resources. Traditionally, it was observed that some lecturers are willing to share their work than others, indicating the need to understand lecturers' psychological and behavioural determinants that influence knowledge sharing on OER. The studies presented the methodological rigour in adopting descriptive surveys in which questionnaire was the dominant instrument used. While these methodologies are not exhaustive in themselves, their findings cannot be refuted without empirical evidence. For instance, the development of scale to measure attitude to OER on face-to-face interview is believed to yield not only a valid result but a confirmatory approach to the findings of the quantitative results.

2.4 Summary of Literature Reviewed

Empirical studies on the acceptance and use of OER across geographies have set the basis for understanding the potential of its use and how lecturers can take action by sharing their teaching and learning resources. However, most studies reviewed were carried out in other countries than Nigeria. For example, on lecturers' acceptance to share OER, Hatakka (2016); Cox and Trotter (2017); Kurelović (2018) and Padhi (2018) conducted a study in Africa, Asia and United Kindom respectively and their findings indicated that performance expectancy and effort expectancy positively impacted on lecturers' acceptance to share OER. The study of Mtebe and Raisamo (2014) on challenges and instructors' intention to

adopt and use open educational resources in higher education in Tanzania revealed a contrasting finding in which the three factors performance expectancy, facilitating conditions, and social influence did not have a significant effect.

On lecturers' use of shared OER, De-Oliveira *et al.,* (2017) reported that fifty one percent of respondents have used OER, a rate slightly differentiated by region: forty nine percent in South America, forty six percent in Sub-Saharan Africa and fifty six percent in South and Southeast Asia. A number of variables were associated with varying levels of OER use rates – such as instructors' country of habitation, level of digital proficiency, educational qualification, institutional position and attitude to education – while many others were not, such as instructors' gender, age or perception of their institutions' OER-related policies.

On lecturers' attitude toward OER, Daud *et al.,* (2015) reported a result from a quantitative cross-sectional study indicating attitude, normative norm and perceived behavioural control as having significant effect on knowledge sharing behaviour of academic staff. In contrast, comply norm was not significant on knowledge sharing behaviour. Moreover, Skaik and Othman (2017) indicated that attitude is significantly and positively influenced by trust and reputation as motivators of knowledge sharing behaviour. Similarly, Panda and Santosh (2017) results indicated that faculty had a positive inclination towards sharing of knowledge and learning resources and believed that the learning resources should be made available and free of cost to all. The results also indicated that ninety-one percentage of faculty members recognized that sharing of knowledge and learning resources is helpful in research and teaching activities and are aware of the importance of sharing within the faculty.

Regarding the research methodology and statistical analysis used, most of the studies reviewed had similar methodology. For example, survey methods utilizing a questionnaire are usually the main instruments for data collection and very few studies included interview

as part of their data collection procedures. The dominant statistic used was Pearson Correlation Coefficient, t-test, to establish the correlation amongst the research constructs (Effort Expectancy, Performance Expectancy, Facilitating Conditions, and Social Influence). Similarly, linear, multiple regression and factor analysis were used to establish any possible effect of independent variables (Age, Gender, Experience, Voluntariness, Effort Expectancy, Performance Expectancy, Social Influence and Facilitating Conditions) on the dependent variables (acceptance, utilization and Behavioural Intention). Descriptive statistics such as mean and frequencies was applied to the demographic data (age, gender, experience).

On the theoretical model used for the reviewed studies, unified theory of acceptance and use of technology (UTAUT) model was the most applied theory for OER acceptance, use and behavioural intention to use among university lecturers across geographies. Key findings reported that Performance Expectancy, Effort Expectancy, Social Influence have a statistically significant positive influence on the educators' behavioural intention to adopt and use OER (Kandiero 2015; Yogesh *et al.*, 2017).

On the whole, prior studies majorly focused more on establishing the individual association of either performance expectancy, effort expectancy, social influence and facilitating conditions with lecturers' adoption of OER. Little attention was paid to lecturers' acceptance, utilization and attitude towards knowledge sharing on OER repository especially, the role of lecturers' behavioral intention to share knowledge supported by OER. While these constructs are cognitive and psychomotor domain based, attitude which is a latent construct that stand to cater for affective domain in the study was not heeded for. This study intends to fill the void by examining the combined influence of lecturers' acceptance and use of OER for knowledge sharing in North-East universities using the Unified Theory

of Acceptance and Use of Technology (UTAUT) model in addition to attitude toward OER for knowledge sharing using mixed method design.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

This study employed a concurrent embedded mixed method design to investigate the decisions that shape lecturers' acceptance, use and attitude toward knowledge sharing on OER in North-East universities. Mixed method is an approach to inquiry that involve combining quantitative and qualitative research methods in a research study (Creswell, 2009). Concurrent embedded mixed method is identified by its use of one data collection phase, during which both quantitative and qualitative data are collected simultaneously. It

has a primary method (quantitative) that guides the study and a secondary method (qualitative) that provides a supporting role in the procedures. The specific design for the primary quantitative method was the correlational study in order to generalize results to the population. While open-ended focus group interviews were the qualitative method that focuses on collecting detailed views from participants to help explain the initial quantitative survey. The concurrent embedded mixed methods design is visually illustrated in Figure 3.1.

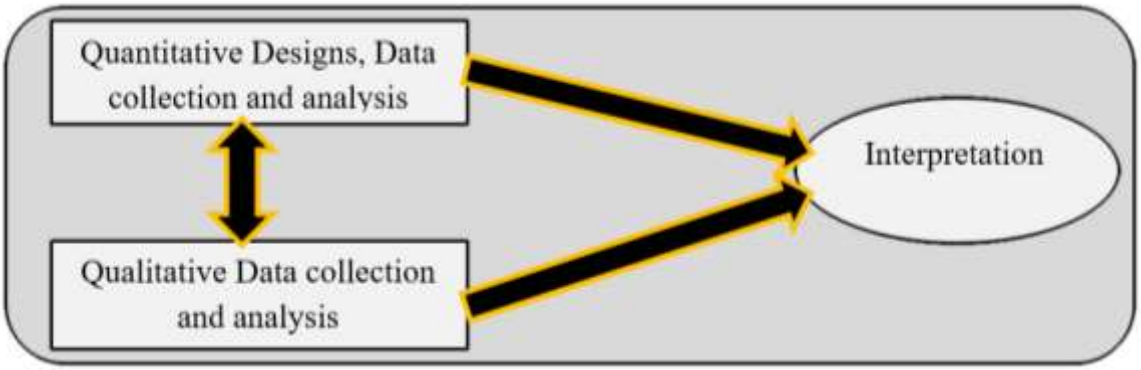


Figure 3.1: Visual illustration of Concurrent Embedded Mixed Methods Design
Source: Adopted from Creswell and Creswell, (2018).

The quantitative methods employed a prediction correlational research design to investigate Lecturers' Acceptance and Use of Open Educational Resources (OER) for knowledge sharing in Universities of North-East Nigeria. Correlational studies are used for relating variables or predicting outcomes involving systematic investigation of the nature of relationships between and among variables, rather than direct cause-effect relationships. Prediction correlational designs predict the variance of predictor variables based on the variance of outcome variable. The design was used to measure the influence of performance expectancy, effort expectancy, social influence and facilitating conditions on lecturers'

acceptance to share OER and utilization of shared OER in the Universities of North-East Nigeria.

The qualitative method employed a focus group interview to investigate lecturers' Attitude towards acceptance to share and use the shared knowledge on OER in Universities of North-East Nigeria. Qualitative research is good for describing, identifying and exploring the phenomena of human behaviour. However, it is difficult to identify a relationship among the variables as well as the strength of the relationship because, qualitative research focused on exploration rather than generalization. Recently, researchers such as Creswell and Creswell (2018) advocated for paradigm combination to take advantage of the strengths of each approach and complement each other in research.

The reason for the mixed method is based on the underlying assumption that collecting diverse type of data provides a more complete understanding of the research problem than either quantitative or qualitative data alone. For this study, both quantitative (broad numeric trends) and qualitative (detailed views) approaches was combined to better understand the research problem. In addition, insights gained from the interview of a small subsample of lecturers holding administrative offices regarding their attitude toward resource sharing on OER was used to further examine their level of acceptance and use. Thus, the two components of the study are complementary in that the qualitative component attempts to expand upon and cross-check the validity of the quantitative results. Figure 3.2 shows a visual illustration of the design layout.

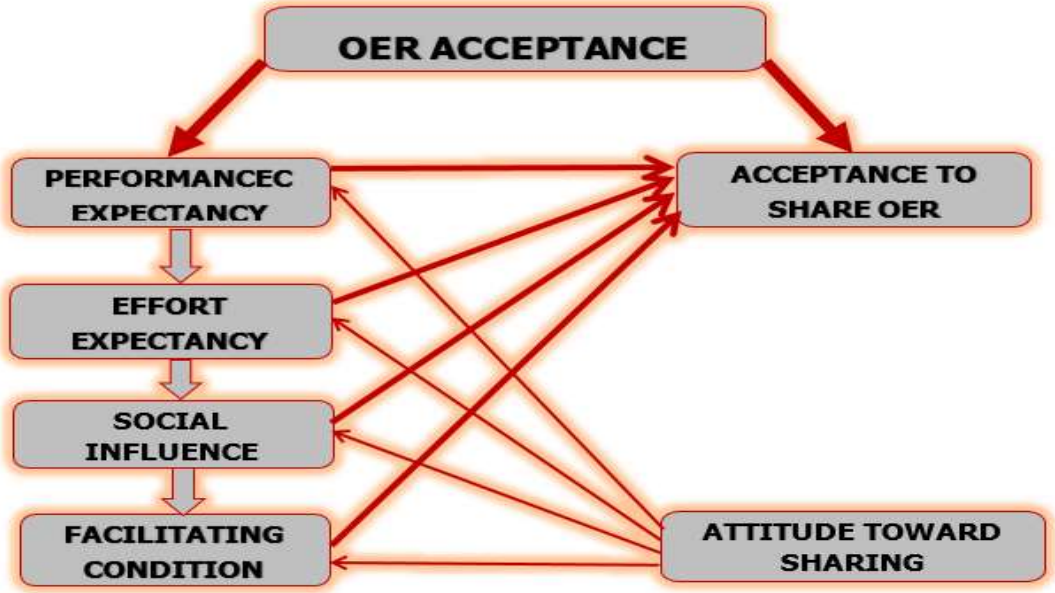


Figure 3.2: Pattern of Research Design I
Source: Researcher, 2021

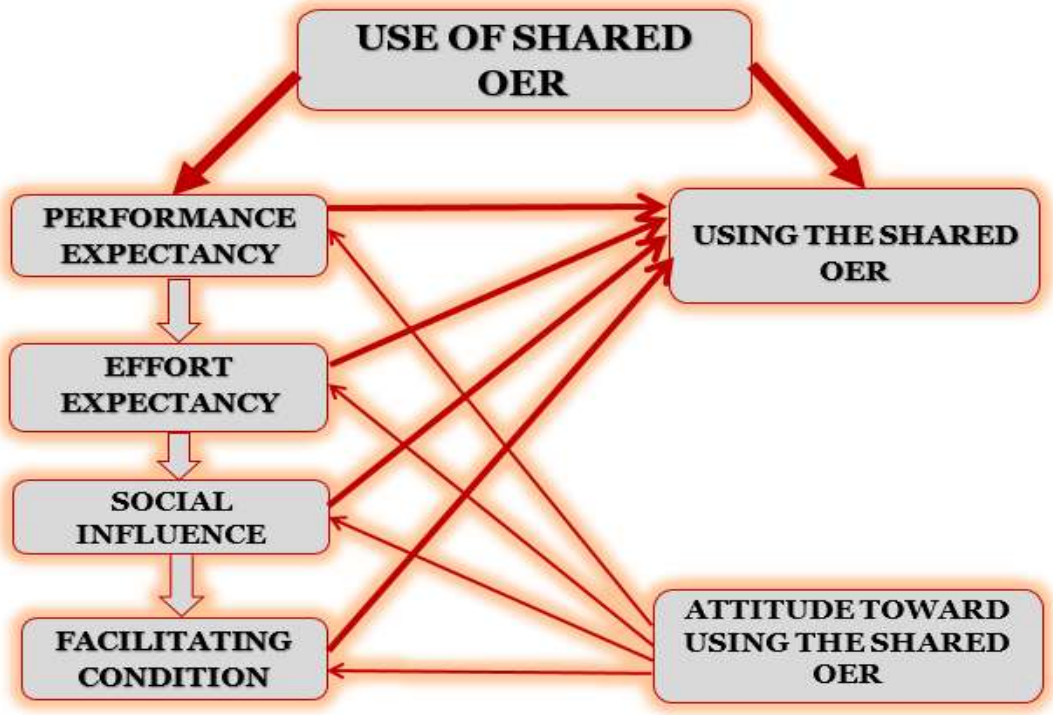


Figure 3.3: Pattern of Research Design II

Source: Researcher, 2021

3.3 Population of the Study

The population for this study consisted of all lecturers in the six Federal Universities of North-East Nigeria. The target population consist of 632 lecturers in faculties of education in the six Federal Universities in North-East, Nigeria (Appendix A). The choice of lecturers in faculties of education is based on the consideration that: OER is a subset of educational technology and a sibling of the open source software and open access movement (Hodgkinson-Williams & Arinto, 2017). In addition, educational technology experts are housed in faculties of education and are more conversant with the design and development of digital resources such as videos, animations, graphics, PowerPoint presentations and courseware as part of the instructional resources. Experts in curriculum and instruction, educational psychology and the rudimentary aspects of instructional design systems, course content development and evaluations are all housed in the faculty.

3.4 Sample and Sampling Technique

The sample for the quantitative method comprised of 338 lecturers drawn from three purposively sampled federal universities distributed within the three states (Adamawa, Bauchi, and Borno State) in North-east Nigeria. Purposive sampling is used in order to access 'knowledgeable people' who have in-depth knowledge about particular issue by virtue of their professional roles, expertise or experience. The three universities were purposively sampled based on the functionality of the OER repository from the six federal universities in North-East, Nigeria.

The sample for the qualitative method consisted of 21 lecturers holding administrative positions like the Deans, Head of Departments, and Directors in their respective universities using a homogenous sampling procedure. Johnson and Christensen (2014) stated that focus group researchers commonly use homogeneous sampling procedure with small groups of

around six or seven participants to gain an in-depth understanding of how the people in the group think about a topic. A nested concurrent mixed sampling design was adopted as the general mixed method sampling procedure in which a quantitative and qualitative data was collected at approximately the same time (i.e., concurrently) but with the qualitative sample being a subset of the quantitative sample.

3.5 Research Instruments

The research instruments used for the study were structured closed ended questionnaire and open-ended focus group interview protocol. The questionnaire titled "Lecturers Acceptance and Use of Open Educational Resources (LAUOER)" was adapted from the OER hub's (http://oerhub.net) researchers' pack, modified to fit the research objectives and context and used as a predominant quantitative data collection. While the focus group interview protocol was developed by the researcher for qualitative data collection. The reasons for the use of questionnaire for data collection was to generalize about a population based on a small sample, collect both descriptive and relational information, address numerous research questions and hypothesis. Consequently, the challenges of using a questionnaire abound and are not limited to; low response rate, untimely response and difficulty in identifying the validity of the answers.

As the lecturers' attitude to OER and attitude to knowledge sharing on OER are not addressed in the quantitative aspect of the study, a focus group interview with lecturers holding administrative positions in the universities was used to refine and enrich the data earlier collected. Focus group interview focuses on group communication to explore the knowledge and experience of the participants. The use of focus group interview in this study was found relevant because; the presence of the interviewer help clarifies queries from the respondents and stimulated the respondents to give frank answers that guide the researcher. Furthermore, there is evidence that face-to-face encounters improves response rates.

However, the successfulness of the interview depends highly on the organization of the session itself, the facilitator and the approach taken for documenting the sessions. The group of lecturers with administrative positions was addressed in a focus group session.

3.5.1 Development of the research instruments

A: Questionnaire

The structured closed ended questionnaire titled "lecturers' acceptance and use of open educational resources (LAUOER) was pattern in to three sections. Section A, B and C. Section A focused on the demographic information, Section B elicited information from respondents on performance expectancy, effort expectancy, social influence and facilitating conditions on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria. Section C focused on eliciting information on performance expectancy, effort expectancy, social influence and facilitating conditions on lecturers' utilization of shared OER in the selected Universities of North-East Nigeria. The total number of items in the questionnaire were 73 (Appendix B) with five (5) Point-Likert type options i.e., Strongly Agree (SA)=5, Agree (A)=4, Neutral (N)=3, Disagree (D)=2, and Strongly Disagree (SD)=1. Based on these constructs, questions for a draft pilot survey were formulated and sent for validation.

B: Focus group interview protocol

Focus groups are formally organised, structured groups of individuals brought together to discuss a topic or series of topics during a specific period of time. It allows for interaction between the researcher and the participants and among the participants themselves. The lead questions for the focus group interview protocol emanated from the theoretical constructs used in the study (Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions). Whereas, the sub-questions were derived from the questionnaire items but focus on how the determinants influence lecturers' attitudes toward

knowledge sharing on OER in the selected Universities of North-East Nigeria. Based on these variables, questions for the pilot survey were formulated and sent for validation (Appendix C).

3.6 Validation of Research Instruments

The structured closed ended questionnaire on performance expectancy, effort expectancy, social influence, and facilitating conditions on lecturers' acceptance to share OER and utilization of shared OER in the selected universities of North-East Nigeria were subjected to face and content validations. Validation is a process of subjecting instruments to proper scrutiny to ascertain whether the approach to measurement used in the study actually measures what it is supposed to measure.

3.6.1 Validity of LAUOER questionnaire

The questionnaire used for the study was a standardized questionnaire adapted from the OER hub's (http://oerhub.net). The aspect of the questionnaire adapted was the pattern of the wordings to suit the UTAUT construct. The instrument was already validated by the OER community, despite its validation, it was further subjected to face and content validation by four experts from educational technology and science education. Three were from Federal University of Technology Minna and one from Federal University of Kashere Gombe State. For face validation, the arrangement of text, selection of fond size and the general outlook of the questionnaire was examined for its suitability to be administered to university lecturers. For content validation, the validators checked if the instrument fairly and comprehensively cover the items of the UTAUT constructs. After the validation, the

contributions, observations and possible modifications made were incorporated in to the instrument (Appendix D).

3.6.2 Validity of focus group interview protocol

The focus group interview protocol was validated by the same experts that validated the questionnaire. Additionally, an expert in English language and communication skills also validated the instrument. The experts ascertained the appropriateness, the simplicity of the language and the clarity of the scale statements. Based on these, some of the scale statements were re-worded in response to the views and comments of the assessors.

3.7 Reliability of Research Instruments

To ascertain the reliability coefficient of the instruments, a pilot study was conducted on 60 university lecturers purposively selected from Federal University of Kashere, Gombe State. The lecturers were part of the population but not included in the final sample used for the study. The questionnaire items were administered to the respondents once through paper based and online google form and were retrieved after completion. The retrieved copies of questionnaire were subjected to Cronbach's alpha (α) analysis using SPSS version 23.0.

The reliability coefficient of the constructs for lecturers' acceptance to share OER was .956 for Performance Expectancy, .925 for Effort Expectancy, .955 for Social Influence, .879 for Facilitating Conditions, and .948 for acceptance to share OER. Similarly, the reliability coefficient of the constructs for lecturers' use of the shared OER was .973 for Performance Expectancy, .958 for Effort Expectancy, .962 for Social Influence, .947 for Facilitating Conditions and .960 for use of the shared OER. The calculated Cronbach's alpha coefficients showed an excellent reliability and all the items across the constructs are worthy to be retained (Appendix E1 and E2). These constructs were further summarized in

(Appendix F). Based on Cronbach (1951) rule of thumb, the instrument was considered reliable and adequate for the study.

For the focus group interview protocol, a pilot focus group interview was conducted with seven lecturers purposively selected in the university where the questionnaire was pilot tested. The participants were informed about the purpose of the interview and were encouraged to make suggestions that could further improve the instrument. Multiple investigators of two lecturers were used in collecting, transcription, coding and interpreting the data. The use of multiple observers allows for crosschecking of observations to make sure the investigators reach agreement about what took place during the interview. Similarly, the usefulness of the focus group interview protocol, the duration of time the interview would take and the ability of the researcher to do the job was checked and evaluated.

The outcome of the two investigators was coded as rater (R_1), and rater (R_2) and were assigned a numerical value to qualify the data for Cohen's kappa interrater reliability analysis with the aid of SPSS version 23.0. The result of the analysis showed that Cohen's $\kappa = .611$ with $p < 0.002$ was obtained which indicate a substantial measure of agreement between the two raters' judgement on lecturers' attitude toward knowledge sharing on OER. Similarly, the result of interrater reliability showed Cohen's $\kappa = .688$ with $p < 0.002$ indicating a substantial measure of agreement between the two raters' judgement on lecturers' attitude toward the use of shared OER (Appendix G). Based on Cohen's kappa rule of thumb [00.01—0.20 slight agreement; 0.21—0.40 fair agreement; 0.41—0.60 moderate agreement; 0.61—0.80 as substantial agreement and 0.81—1.00 as perfect

agreement. These results were adjudged to be comprehensive and reliable for the study (Creswell, 2009).

3.8 Method of Data Collection

The researcher visited the sampled universities two weeks before the commencement of data collection to seek permission from the universities administrations. As the permission granted, the researcher approached the Deans of faculties of education to formalise the arrangement for data collection and identify local coordinators (research assistants) preferably educational technology experts to facilitate in the research process at each university. The researcher informed the local coordinators about the objectives of the study, the procedure for conducting data collection and the role they were expected to play in the research process. Furthermore, the researcher in collaboration with the local coordinators distributed the copies of questionnaire to the participants to fill and return to their respective head of departments. While the administration of questionnaire was going on, the researcher arranged with 7 to 10 lecturers holding administrative positions; Deans and heads of departments at faculties of education of the selected universities to begin the focus group interview process. The interview protocol comprised 5–7 semi-structured items, depending on the answers given and lasted between 30 to 60 minutes. At the focus group interview, questions were directed toward lecturers' attitudes toward knowledge sharing on OER. The lecturers were given an opportunity to use their survey written responses and experience to provide an expanded verbal response or to clarify on the written answers during the interviews. Two interviewers were involved for each interactive session, one to serve as group moderator and an assistant who observes the group process, provides information to the moderator when needed, takes notes during the session and ask supplementary questions. Having two interviewers present enabled a post-interview cross-check to be undertaken. Table 3.1 shows strategic plan and time frame for the research study.

Table 3.1 Strategic plan and time frame for the research study

S/N	*Steps*	*Schedule of Activities*	*Duration*
1	Visitation	Visiting the selected universities to inform the university administration about the objectives of the study and seek permission to use their facilities for the study.	3 weeks; 1 week for each university
2	Identification and recruitment of local coordinators	The researcher identifies and recruit 3 local coordinators that will facilitate in the research process. In the recruitment process, posters and hand bill containing schedule for the workshop was given to them to distribute to faculty members.	3 weeks; 1 week for each university
3	Distribution of Questionnaire and conduct of focus group interview	Completion of OER survey questionnaire and focus group interview.	6 weeks; 2 weeks for each university
		Total: twelve weeks	**12 weeks**

Source: Field survey, (2021).

3.9 Method of Data Analysis

The data collected for this study was analysed using descriptive and inferential statistic. Descriptive statistic for quantitative data includes; Simple percentages (%), represented through column chart and was used to analyse the demographic variables while Mean and standard deviation (SD) was used to answer research questions one to four and six to nine with the arithmetic mean for the values computed as: 5+4+3+2+1= 15/5= 3.00. Therefore, any item with weighted mean of 3.00 and above, was considered supported and any item with weighted mean less than 3.00 was considered not supported as a decision rule. Descriptive statistic for qualitative data was thematic analysis and was use to answer research question five and ten with the help of Atlas ti. Version 9.1. For inferential statistic, multiple linear regression analysis was used to test hypothesis one to eight at 0.05 level of

significance using SPSS version 23.0. Figure 3.4 shows the layout of embedded mixed method data analysis.

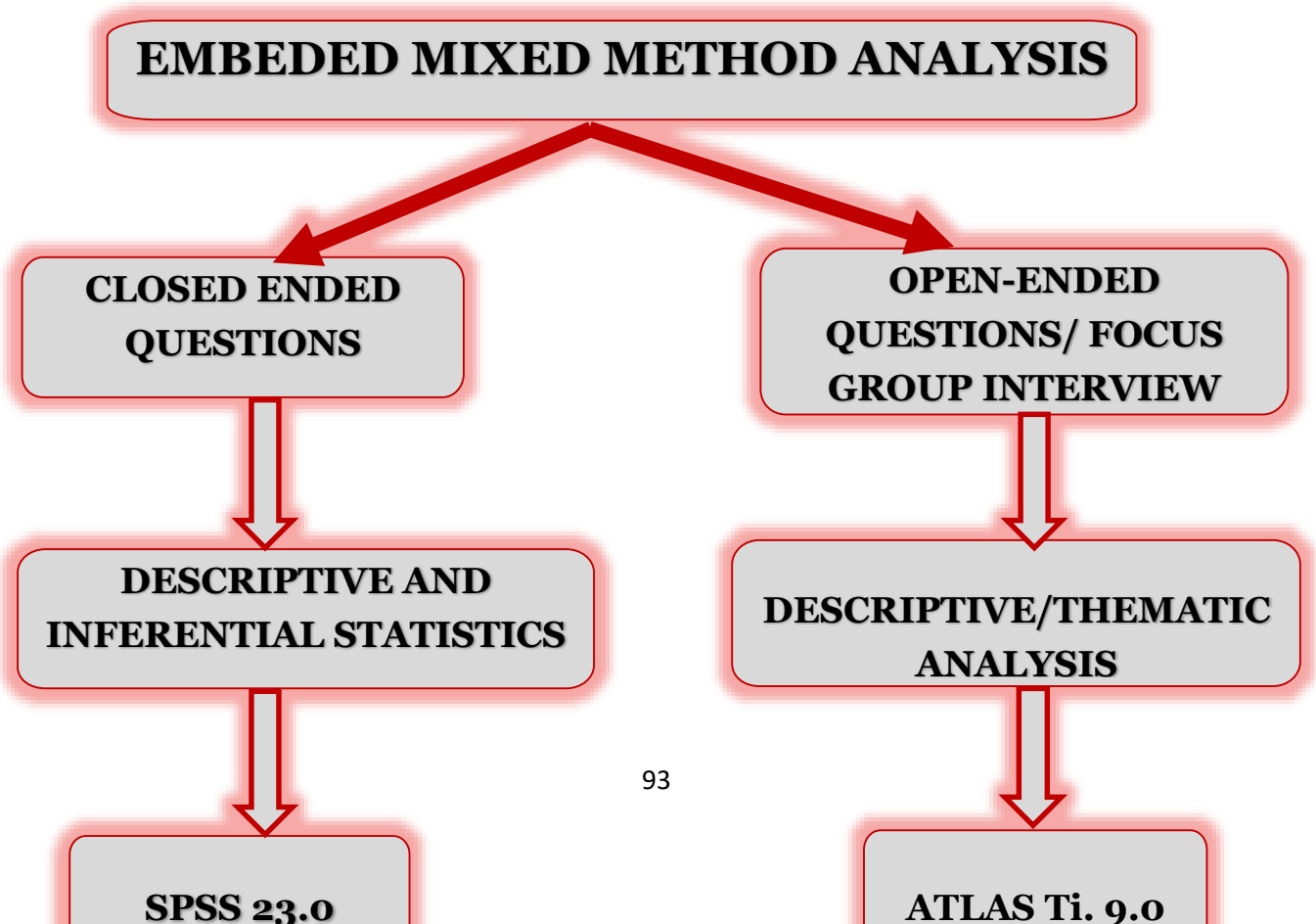


Figure 3.4: Layout of embedded mixed method data analysis.
Source: Researcher, 2021

CHAPTER FOUR

4.0 RESULTS AND DISCUSSIONS

This chapter presents the results and discussion of findings of the study. At the point of analysis, the performance expectancy, effort expectancy, social influence and facilitating conditions for acceptance to share OER and the use of shared OER among lecturers were examined through IBM SPSS program for accuracy of data entry, missing values, and fit between their distributions and the assumptions of multivariate analysis. Prior to multivariate analysis, all the assumptions were checked and established. Two cases detected with extremely low z scores on facilitating conditions for acceptance to share OER were found to be univariate outliers; two other cases on effort expectancy for use of shared OER

were identified through Mahalanobis distance as multivariate outliers with $p < .001$. The four outliers were completely deleted from the data set, leaving 338 cases for analysis. Additionally, a square root transformation was applied on the data in order to qualify for multiple linear regression analysis.

4.1 Demographic Data

A total of 338 faculty responded to the survey. The population contains 632 faculty members. Thus, the overall response rate was approximately 53.5%. and it is in line with experts' assertion that a survey response rate of 50% or higher is often considered to be excellent for most circumstances. The demography part of the research instrument required the respondents to indicate the rank they belong to; the years of working experience in the university, their familiarity with OER, the device they used in accessing OER and the frequency of their visit to OER repository. Based on the data provided by the respondents, frequency and percentages were calculated and presented in Table 4.1.

Table 4.1: Frequency and percentages of demographic data of respondents

Rank/Cadre	***Frequency***	***Percentage***
Professorial	72	21.3
Senior Lecturer	144	42.6
Lecturer I, II, AL and GA	122	36.1
Total	**338**	**100**
Years of Working Experience	***Frequency***	***Percentage***
21-35 years	79	23.4
11-20 years	156	46.1
0-10 years	103	30.5
Total	**338**	**100**
Familiarity with OER in years		
More than 5 years	54	15.9
3-5 years	78	23.1
1-3 years	117	34.6
Less than 1 year	89	26.4
Total	**338**	**100**
Device for Accessing OER		
Desktop computer	48	14.2

Laptop	177	52.3
Tablet	51	15.1
Smart phone	62	18.4
Total	**338**	**100**
Frequency of Accessing OER Repository		
Daily	76	22.5
Weekly	116	34.3
Monthly	50	14.8
Occasionally	96	28.4
Total	**338**	**100**

Source: Field survey

Table 4.1 shows the frequency and percentages of demographic data of respondents. The results on lecturer's rank/cadre indicates that majority of lecturers were Senior lecturers (42.6%), followed by Lecturer I, II, Assistant Lecturers and Graduate Assistants (36.1%), and the remaining are professorial cadre with (21.3%) respectively. The reported percentages implies that the workforce in these universities had adequately satisfies the requirement of National Universities Commission (NUC) academic staff mix by rank which emphasize on 20:35:45 ratio. The results on lecturer's years of working experience indicates that majority of lecturers spent 11-20 years (46.1%) working in the universities. The second category are those with 0-10 years (30.5%) while the last category is those with 21-35 years (23.4%) who formed the senior cadre. The reported percentages are in line with the earlier results on lecturer's rank/cadre and implies that the universities' workforce lies at the middle level, followed by the bottom with a shrinking tendency at the professorial level.

The results on lecturer's familiarity with OER in terms of years indicates that majority of lecturers knew about OER in only 1-3 years (34.6%), followed by those who knew about OER in less than 1 year (26.4%). Those who knew about OER in 3-5 years (23.1%) and more than 5 years (15.9%) are few among the university lecturers. This implies that OER is still new in these universities. Though, the magnitude of OER popularity is growing exponentially among academics. On the device for accessing OER among university lecturers, the results showed that laptop with (52.3%) is the highest digital device used for

accessing OER, followed by smart phone (18.4%), tablet (15.1%) and desk top computer (14.2%) being the least respectively. Regarding frequency of accessing OER repository, the result indicated that majority of lecturers visits the repository weekly (34.3%), occasionally (28.4%), daily (22.5%) and monthly (14.8%) respectively. This implies that due to lecturers' schedules, they only access OER repository weekly to either upload a new resource or download the shared OER. The demographic data was graphically illustrated in a clustered column chart Figure 4.1.

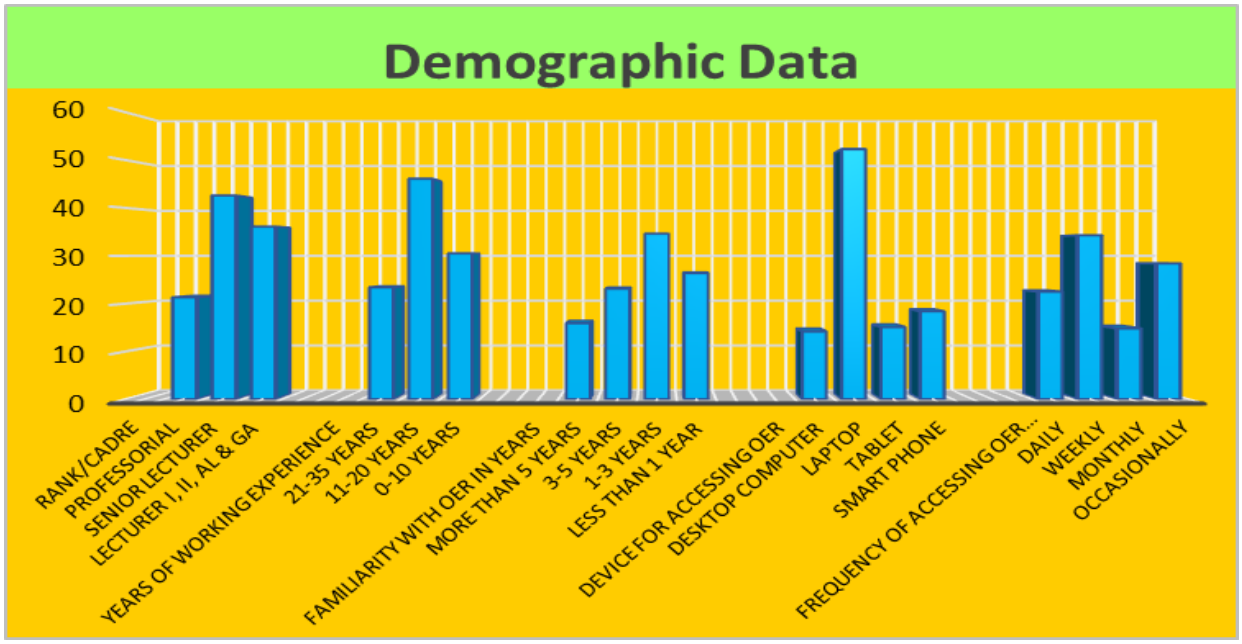


Figure 4.1: Clustered Column Chart for Demographic Variables

A clustered column chart is used to compare values across the demographic data. The chart graphically illustrated how the generated percentages are displayed based on the demographic variables. Thus, in each cluster, the taller bar represents high percentage while the shorter bar represents the lowest percentage.

4.2 Answering Research Questions for Quantitative Data (Phase Ia).

Research question one: What is the influence of performance expectancy on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria?

Table 4.2 presents the mean and standard deviations of respondents' opinions regarding the influence of performance expectancy on lecturers' acceptance to share OER in selected universities of North-East Nigeria. The table provides insight into the perceptions of lecturers regarding the potential benefits and impact of accepting to share OER in the university's' repositories. The table consists of seven statements rated by the respondents on a Likert scale. The respondents' mean scores ($\bar{X}$) and standard deviations (SD) are provided, indicating the average level of agreement or disagreement among the respondents for each statement.

Table 4.2: Mean and standard deviations of respondents on the influence of performance expectancy on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria.

S/N	Statements	N	$\bar{X}$	SD	Decision
1	Developing and sharing resources on the university OER repository will improve my academic writing skills.	338	3.28	1.552	Agree
2	Sharing resources on OER will enable me get feedback from colleagues and students on how to further improve my academic knowledge.	338	3.38	1.384	Agree
3	Sharing OER will enhance my confidence and academic productivity, as I see myself as part of the larger community.	338	2.95	1.463	Disagree
4	Sharing resources on OER will enable me fulfil the community service component of my lecturing job.	338	3.31	1.301	Agree
5	Uploading resources on OER will improve my computer and internet skills.	338	2.97	1.299	Disagree
6	My resources on OER will increase my academic network and sphere of influence.	338	3.42	1.379	Agree
7	Accepting to share OER will improve my research knowledge at the university.	338	2.97	1.336	Agree
	Cumulative mean		**3.18**		

Key: Decision mean=3.0, N, Number in samples, $\bar{X}$ = Mean, SD= Standard Deviations

Table 4.2 shows the mean and standard deviation of respondents on the influence of performance expectancy on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria. The table reveals that the mean responses to each of the items (ranges from 3.28 to 3.42) were consistently above the decision mean of 3.0 with the exception of

item 3, 5 and 7 which are below the decision mean. Similarly, the cumulative mean response of 3.18 was obtained for the 7 items with OER having capacity to improve lecturers academic writing skills, increase academic network and sphere of influence and obtaining feedback from colleagues as the most important contributors to performance expectancy variable. Since, the cumulative mean is above the decision mean, it implies that respondents are in agreement with the statements. Hence, performance expectancy variable influence lecturers' acceptance to share OER in the selected Universities of North-East Nigeria.

Research question two: What is the influence of effort expectancy on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria?

Table 4.3 presents the mean and standard deviations of respondents' opinions regarding the influence of effort expectancy on lecturers' acceptance to share OER in selected universities of North-East Nigeria. The table provides insights into lecturers' perceptions of the ease of use and the level of effort required for knowledge sharing purposes on OER repository. The table consists of eight statements rated on a Likert scale. The mean scores ($\bar{X}$) and standard deviations (SD) are provided, indicating the average level of agreement among the respondents for each statement.

Table 4.3: Mean and standard deviations of respondents on the influence of effort expectancy on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria.

S/N	Statements	N	$\bar{X}$	SD	Decision
1	I find visiting the university OER repository very easy.	338	3.20	1.279	Agree
2	I find navigating the university OER repository straight forward and less cumbersome.	338	3.23	1.223	Agree
3	I find the URL link to my university OER repository highly responsive.	338	3.18	1.256	Agree
4	I find the university OER repository user friendly and so developing and uploading resources becomes easy.	338	3.12	1.271	Agree

5	Due to its flexibility, I use my computer, tablet and mobile phone to visit the university OER repository.	338	3.26	1.274	Agree
6	Sharing resources on OER repository comes easy once I am connected to the internet.	338	3.17	1.280	Agree
7	Selecting where a particular resource can reside in the OER repository is easy.	338	3.13	1.204	Agree
8	Locating a particular resource to share from my computer directory is free of effort.	338	3.11	1.289	Agree
	Cumulative mean		**3.18**		Agree

Key: Decision mean=3.0, N, Number in samples, $\bar{X}$ = Mean, SD= Standard Deviations

Table 4.3 shows the mean and standard deviation of respondents on the influence of effort expectancy on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria. The table reveals that the mean responses to each of the items (ranges from 3.11 to 3.26) were consistently above the decision mean of 3.0. Additionally, a cumulative mean score of 3.18 was obtained for the eight items in which the use of computer, tablet and mobile phone to visit the university OER repository, the highly responsive nature of the URL link to OER repository and the user friendliness in uploading resources on OER as the most important effort expectancy variables for lecturers in North-East Universities. Since, the cumulative mean is above the decision mean, it implies that respondents are in agreement with the statements. Hence, effort expectancy has influence on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria.

Research question three: What is the impact of social influence on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria?

Table 4.4 presents the mean and standard deviations of respondents' opinions regarding the impact of social influence on lecturers' acceptance to share OER in selected universities of North-East Nigeria. The table provides insights into the perceptions of lecturers regarding

the expectations and opinions of various individuals and groups within their academic community, and how these social influences affect their decision to share teaching resources on the OER platform. The table consists of ten statements rated on a Likert scale. The mean scores ($\bar{X}$) and standard deviations (SD) are provided, indicating the average level of agreement or disagreement among the respondents.

Table 4.4: Mean and standard deviations of respondents on the impact of social influence on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria.

S/N	Statements	N	$\bar{X}$	SD	Decision
1	My colleagues in Commonwealth of Learning (COL) expect me to upload course materials and make them freely available for download and adaption by community of users.	338	2.89	1.350	Disagree
2	My colleagues in OER community think I should share teaching resources to make presence in the world OER map.	338	3.13	1.242	Agree
3	My co-lecturers in the university think we should collaborate to share teaching resources on OER repository.	338	3.25	1.188	Agree
4	My senior colleagues in the university expect to see my resources on OER repository.	338	3.28	1.245	Agree
5	My students in the university think I should share teaching resources on OER.	338	3.01	1.360	Agree
6	My mentees in the university think I should upload my resources on OER for their academic guidance.	338	3.09	1.301	Agree
7	Lecturers who are important to me in the university think I should share my teaching resources on OER.	338	3.15	1.228	Agree
8	My students who have concern for computer virus think I should share my teaching resources on OER.	338	3.14	1.305	Agree
9	My Head of Department think I should upload my resources on OER as directed by the university administration.	338	3.35	1.288	Agree
10	My colleagues in other faculties are looking up to seeing my resources on the university OER.	338	3.20	1.336	Agree
	Cumulative Mean		**3.15**		Agree

Key: Decision mean=3.0, N, Number in samples, $\bar{X}$ = Mean, SD= Standard Deviations

Table 4.4 shows the mean and standard deviation of respondents on the impact of social influence on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria. The table reveals that the mean responses to each of the items (ranges from 2.89 to 3.35) was consistently above the decision mean of 3.0 excepts item one. Additionally, a cumulative mean score of 3.15 was obtained for the ten (10) items to which co-lecturers, senior colleagues' expectation to share resources and the university managements' directive to upload resources on OER repository contributed more to the social influence variable. The cumulative mean is above the decision mean, implying respondent's agreement with the statements. Hence, social influence has impact on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria.

Research question four: What is the influence of facilitating conditions on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria?

Table 4.5 presents the mean and standard deviations of respondents' opinions on the influence of facilitating conditions on lecturers' acceptance to share OER in selected universities of North-East Nigeria. The table provides insights into the perceptions of lecturers regarding the availability of necessary resources and support systems that facilitate their engagement with OER repositories for knowledge sharing purposes. The table consists of eight statements rated on a Likert scale. The mean scores ($\bar{X}$) and standard deviations (SD) are provided, indicating the average level of agreement or disagreement among the respondents for each statement.

Table 4.5: Mean and standard deviations of respondents on the influence of facilitating conditions on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria.

S/N	Statements	N	$\bar{X}$	SD	Decision
1	My university has ICT centre and a robust internet connectivity that make OER repository always available.	338	3.16	1.298	Agree
2	I have computer and the internet skill necessary to develop and upload teaching resources on OER.	338	3.36	1.311	Agree
3	I have the knowledge of computer and the internet necessary to integrate OER into my courses.	338	3.38	1.305	Agree
4	My university has already developed OER policy which I am encouraged to accept.	338	3.22	1.326	Agree
5	OER administrators are available for guidance in developing and uploading the teaching resource.	338	2.99	1.374	Disagree
6	Technical assistants are available to help me in sharing teaching resources to OER repository and integrating it into my courses.	338	3.10	1.337	Agree
7	The university management is ready to reward lecturers who share their teaching resources on OER repository.	338	3.05	1.331	Agree
8	The university has steady electricity and a stand-by generating plant that facilitate the development and sharing of OER to the community.	338	3.14	1.336	Agree
	Cumulative Mean		**3.17**		Agree

Key: Decision mean=3.0, N, Number in samples, $\bar{X}$ = Mean, SD= Standard Deviations

Table 4.5 shows the mean and standard deviation of respondents on the influence of facilitating conditions on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria. The table reveals that the mean responses to each of the items (ranges

from 2.99 to 3.38) was consistently above the decision mean of 3.0 excepts item five. Additionally, a cumulative mean score of 3.17 was obtained for the eight items in which availability of ICT centre and a robust internet connectivity, coupled with possession of computer and the internet skills necessary to develop and upload teaching resources on OER by lecturers and their ability to integrate OER resource in their teaching courses as the major contributors to facilitating conditions variable for lecturers' acceptance to share OER. Since, the cumulative mean is above the decision mean, it implies that respondents are in agreement with the statements. Hence, facilitating conditions has influence on lecturers' acceptance to share OER in the selected Universities of North-East Nigeria. The overall means of the constructs on acceptance to share OER was summarized and graphically presented in a column chart Figure 4.2.

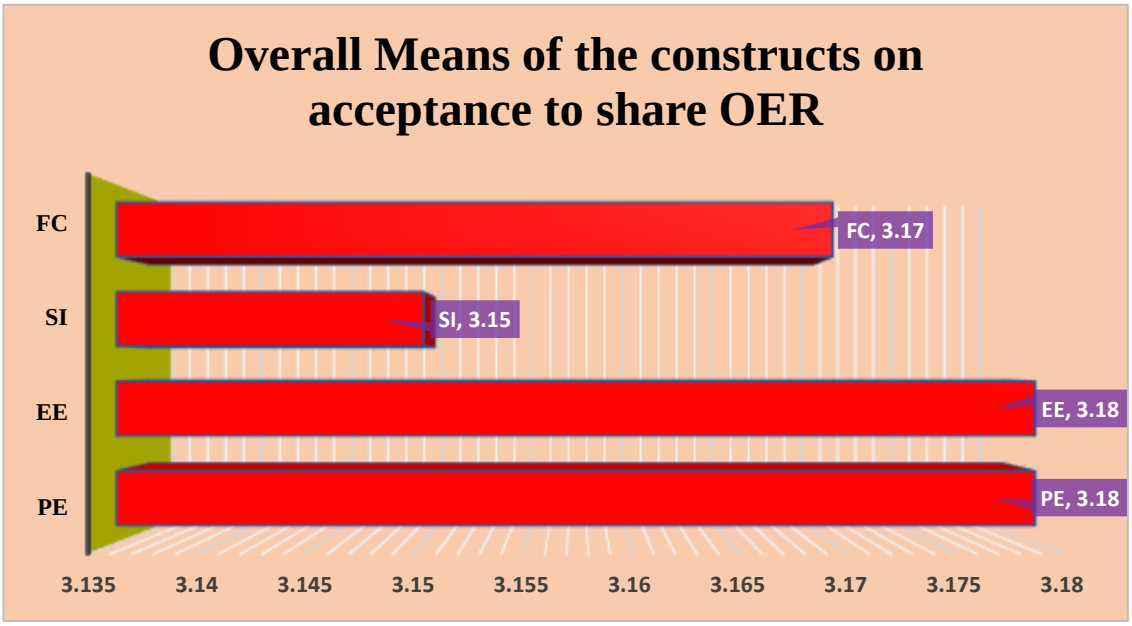


Figure 4.2: Summary of the overall means of the constructs on acceptance to share OER.

The column chart displayed the constructs on the y-axis and the corresponding means on the x-axis in which the taller columns indicated a higher means while the shorter columns indicated the lowest mean response. Similarly, the cumulative mean responses were displayed on top of each column for more illustration.

4.3 Answering Research Questions for Qualitative Data (Phase IIa).

Three faculty focus group interviews with 14 lecturers holding administrative positions in the selected universities were conducted to increase understanding of the quantitative findings. The participants relayed additional information connected to lecturers' attitude toward knowledge sharing on OER repositories not revealed by the quantitative findings. Prior to the start of each interview, the purpose of the study was explained to the participants. The interviewees were asked to give their permission for the interview to be recorded for the purpose of the study. As participants accepted, recordings commenced immediately with the use of Samsung Galaxy A31 with an average length of the interview as 27:02 minutes. After the completion of the interview, audio files were automatically created and the researcher transcribed the interview data as text format and saved as Word document. Subsequently, the determinants of lecturers' acceptance to share OER outlined in the survey were reflected in the interview protocol focusing on attitude toward knowledge sharing on OER.

Research question five: How does the determinants influence lecturers' attitudes toward knowledge sharing on OER in the selected Universities of North-East Nigeria?

To answer research question five, the transcripts of the interview were coded using inductive thematic analysis with ATLAS.ti. 9.1 for windows software in which patterns, themes and categories of analysis were generated from the interview data. Four categories which are from the UTAUT constructs and 17 themes emerged. The themes were guided by the participants' responses to the interview questions, and were not based on a pre-existing UTAUT framework.

Performance Expectancy: During the interview, the participants were asked "To what extent do you think *expected academic skills and overall productivity* from the use of OER will influence lecturers' attitude to share knowledge on OER repository?" The participants

communicated that sharing resources on OER repository increased lecturers' awareness, academic skills and overall productivity in the university. It was the participants' believed that many lecturers are looking for an opportunity to share knowledge to their students and colleagues as this will increase their kindness and reputation. As such, their attitude toward knowledge sharing is positive with few of them maintaining neutrality. An excerpt from a participant stated that;

> *"By sharing knowledge on OER, I expect that my academic skills will improve to a greater extent and for the knowledge I share on OER, if actually the end users internalise the idea rather than doing copy and paste which is tantamount to plagiarism in academic parlance will develop me professionally".*

A number of related themes emerged from the data mirroring performance expectancy to include; (1) expected academic skills, (2) opportunity for knowledge sharing, (3) opportunities for professional growth (4) exposure to digital challenges, as shown in Table 4.6a.

Table 4.6a: Thematic analysis and description of emerging themes for performance expectancy construct

S/N	Theme	Description	Significant findings
1	Expected academic skills	Academic writing skills, computer knowledge and operational skills and internet skills.	Expectation for an increased academic skill influence lecturer's engagement in developing digital quality courseware for teaching.
2	Opportunity for knowledge sharing	Sharing knowledge to students and colleagues in the discipline to increase digital presence and popularity.	As OER repositories remained opened for knowledge sharing, lecturers' attitude toward sharing resources digitally increases exponentially.
3	Opportunities for professional growth	Expectation for career advancement	Expected career advancement influence lecturers' attitude toward sharing knowledge on OER repository.
4	Exposure to digital challenges	Unveil lecturer's skill deficiencies.	The presumption of being exposed to digital challenges when dealing with OER influence lecturers'

	attitude to share knowledge on the repository.

Source: Field interview, (2021).

Table 4.6a revealed that performance expectancy thematically described as expectation for an increased academic skill, opportunity to use OER repository for knowledge sharing, expectation for professional growth and exposure to digital challenges collectively influence lecturers' attitude to share knowledge on OER repository. The finding was supported by a network of codes and quotations indicating a relationship between the information given and its direction toward the construct. The codes and quotation network of the constructs on acceptance to share OER was graphically presented in Figure 4.3.

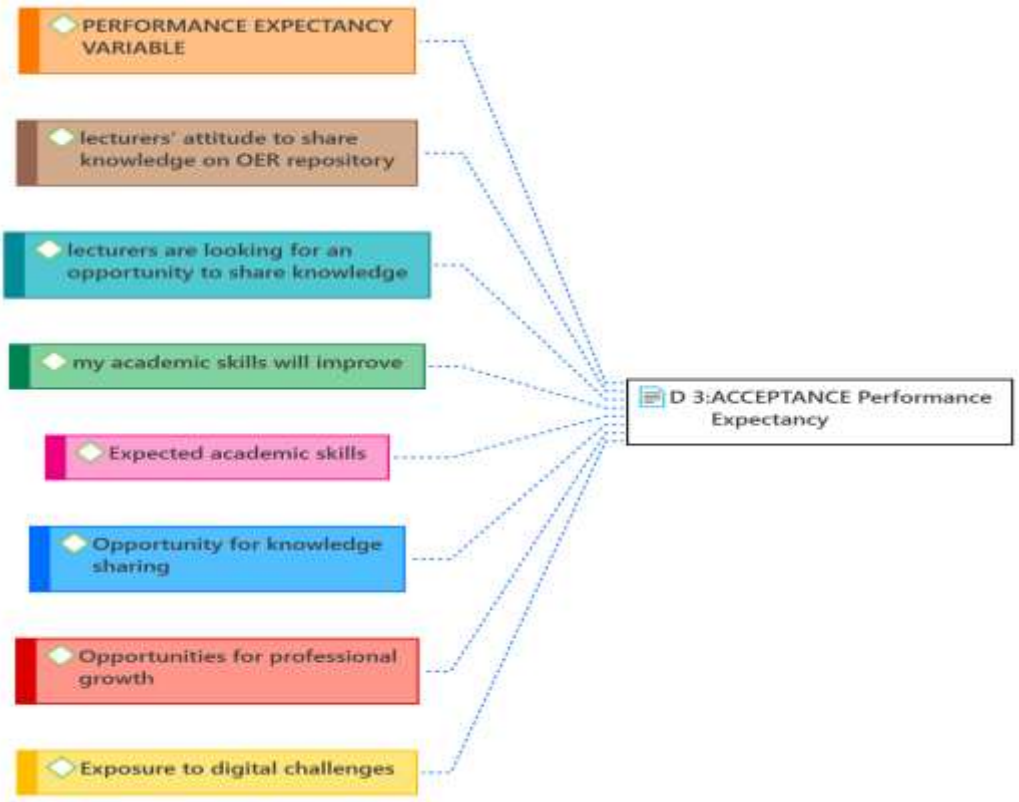


Figure 4.3: Codes and quotation network of the constructs on acceptance to share OER

Figure 4.3 displayed the four codes and an additional four quotations that are relationally connected to the construct performance expectancy. The codes and the quotations

confirmed the results of the quantitative finding that the construct "performance expectancy" influence lecturers' attitude to share knowledge on OER repository.

Effort Expectancy: The interview participants were asked "In what ways do you consider the *expectation of lecturers perceived easiness* of OER activities such as locating, selecting and uploading resources to influence their attitude toward knowledge sharing?" Insight from the interviews revealed that the activities of OER is not far-fetched from the computer usage and internet skills they are used to in their routine work. Therefore, it was the participants' believed that university lecturers use their digital devices to connect to internet, visit OER repositories, upload and download resources effortlessly. An excerpt from a participant stated that;

> *"By the calibre of lecturers we have, they require little effort to share their resources on OER repository. However, this will only happen if the necessary conditions are put in place. For instance, free access to the server, availability of internet services and possibly a scanning machine to help digitized some journal contents which are yet on hard copy."*

The related themes that emerged from the data mirroring effort expectancy include; (1) internet connection via WiFi, hot spot, modem, (2) visiting the OER repositories (3) selecting and developing resources, and (4) sharing resources, as shown in Table 4.5b.

Table 4.6b: Thematic analysis and description of emerging themes for effort expectancy construct

S/N	Theme	Description	Significant findings
1	Internet connection via Wi-Fi, hot spot, modem	Type of internet connection available; institutional, personal	Availability of free access to internet lessen lecturers' burden to buy personal data which influence their attitude toward OER activities.
2	Visiting the OER repositories	The passwords, the URL link to the repository and the timely response.	As the passwords and the URLs are available and active, visiting OER repositories comes easy and

			lecturers find it easy to share resources.
3	Selecting resources	Sorting relevant OER from the repository	Lecturers are used to google pages so selecting OER relevant to their subject matter will be of less effort.
4	Sharing resources	Uploading the developed resource on the repository	Uploading gateways is specified in OER repository. So, it is straight forward and less cumbersome.

Source: Field interview, (2021).

Table 4.6b revealed that provision of free access to internet, the availability and functionality of the repositories' passwords and the URLs, the lecturer's expertise in using google pages and the specification of the uploading gateways collectively influence lecturers' attitude toward knowledge sharing on OER repository as described in the preceding themes. The finding implies that the interviewed participants have the belief that lecturers personal and attitudinal effort to adopt OER is good except that the university administration should provide the necessary facilities in order to make the process easier. The codes and quotation network of the constructs on acceptance to share OER was graphically presented in Figure 4.4.

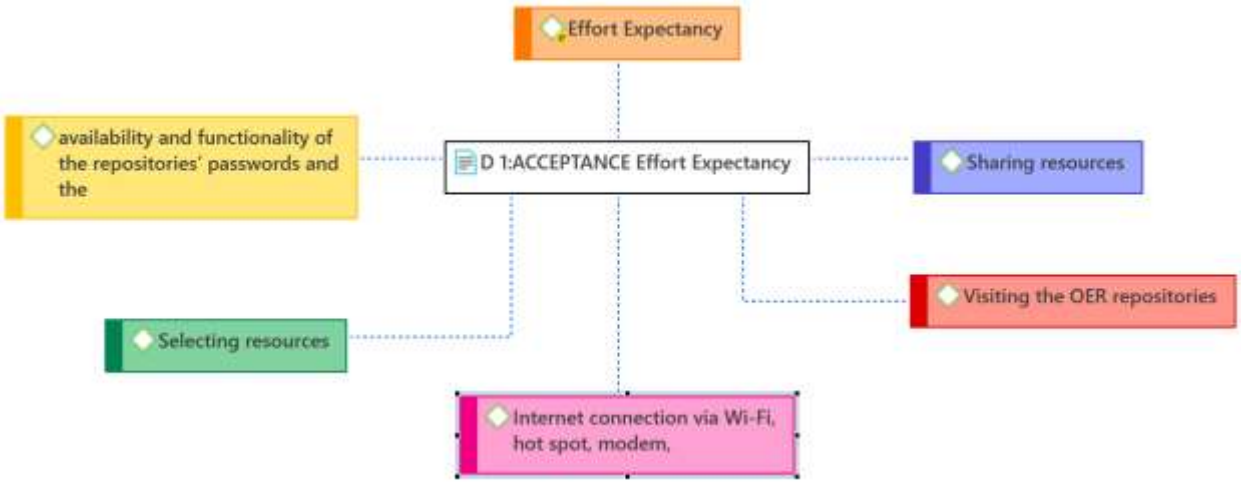


Figure 4.4: Codes and quotation network of the constructs on acceptance to share OER

Social Influence: the interviewed participants were asked "How do you consider *social cohesion among academic community* such as the online community, senior colleagues, co-lecturers and students to influence lecturers' attitude toward knowledge sharing on OER?" They reflected on how a variety of social influence factors stimulate lecturers' attitude toward knowledge sharing on OER repository. An excerpt from a participant stated that;

> *"By virtue of the university culture, knowledge sharing is a norm for teaching, research and community service. So, faculty members, the university OER community, institutional culture and empathy for students influence lecturers to share resources on OER repository."*

The few social influence factors that emerged as themes from the data reflecting on social influence include; (1) faculty members, (2) OER community (3) institutional culture, and (4) empathy for students, as shown in Table 4.6c.

Table 4.6c: Thematic analysis and description of emerging themes for social influence construct

S/N	Theme	Description	Significant findings
1	Faculty members	Colleagues in the university both senior and co-lecturers	The presence of shared resources by faculty members in the repository influence lecturers to share more OERs.
2	OER community	Lecturers who frequently visit the OER repository.	The invitation of OER community to departments and faculties to create resource presence in the repository influenced their attitude to share.
3	Institutional culture	What the university is accustomed to be doing as knowledge sharing culture	The culture of the university to share or be levelled with academic laziness influenced lecturers to share OER.
4	Empathy for students	Taking responsibility in assisting students gain access to learning resources.	The feeling that sharing knowledge on OER repository assist students gain free access to learning resources influence lecturers' attitude to share.

Source: Field interview, (2021).

Table 4.6c revealed that seeing resources shared by faculty members, invitation by OER community, the culture of the university to share or be seen as lazy academics and the compassion for assisting students with learning resources jointly influence lecturers' attitude toward knowledge sharing on OER. The finding implies that lecturers are socially inclined to each other for their routine academic activities such as team teaching, team research and team authorship; their existence in a department and faculty as team also contributed to their interdependency. Therefore, it is not surprising for the interviewed participants to arrive at a common decision to either adopt OER or be socially influenced by their inter-dependent relationships not to adopt it. To further elucidate this position, the generated codes and quotation network of the constructs on acceptance to share OER was graphically presented in Figure 4.5.

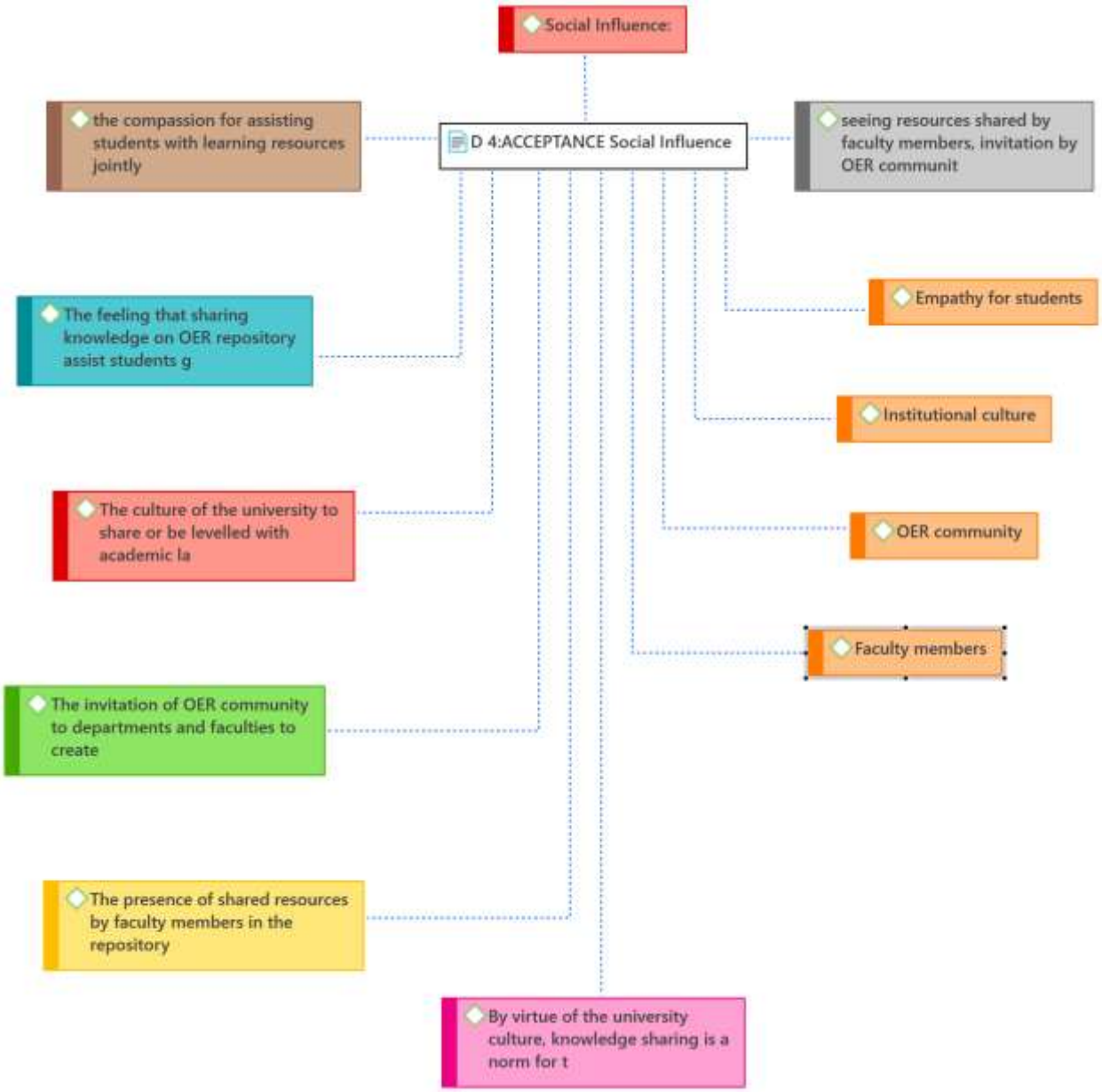


Figure 4.5: Codes and quotation network of the constructs on acceptance to share OER

Facilitating conditions: the interviewed participants were asked; How can you evaluate the university *management's commitment* to technical infrastructure (collection of hardware, software, networks, data subscriptions, power supply, facilities and related equipment) as a preparation for OER uptake to influence lecturers' attitude toward knowledge sharing activities on OER repository? The participants evaluated the university management's commitment regarding provision of technical infrastructure as a good one.

However, they identified lapses which possibly influenced lecturers' negative attitude toward knowledge sharing on OER repository. An excerpt from a participant stated that;

> *"The university management's commitment to technical infrastructure can be rated 50% due to available and observable indices regarding their attitude to provision of technical infrastructure, maintenance and monitoring. Though, policy wise, lecturers were directed to upload their resources on the platform, but there still many stones left unturn. For instance, power supply often truncates the process visa vis poor internet connection and personnel for assisting the less skilled lecturers."*

The identified factors that emerged as themes from the data reflecting on facilitating conditions include; (1) availability of computer and the internet, (2) power supply (3) technical support services and (4) institutional policy, as shown in Table 4.6d.

Table 4.6d: Thematic analysis and description of emerging themes for facilitating conditions construct

S/N	Theme	Description	Significant findings
1	Availability of computer and the internet	Partain to having access to computers and internet	Access to computer and related devices coupled with internet connection influence lecturers' attitude to share OER.
2	Power supply	Power supply of any kind; electricity, solar and stand-by generator.	Steady power supply influence lecturers' attitude toward using computer and internet leading to knowledge sharing on OER.
3	Technical support services	An assistant given to lecturers when facing technical challenges.	When lecturers have assurances that they can be technically assisted in time of need, their attitude toward sharing OER is positive.
4	Institutional policy	Existence of policy framework in the university.	Having OER policy in the university facilitate uptake of OER activities.

Source: Field interview, (2021).

Table 4.6d revealed that access to computer and related devices, steady power supply, assurance for technical assistance and the presence of institutional OER policy jointly influence lecturers' attitude toward knowledge sharing activities on OER repository. However, the absence of these conditions causes negative attitude toward OER acceptance. This finding implies that the views of lecturers holding administrative positions polarized along positive and negative connotations regarding facilitating condition variable. The codes and quotation network of the constructs on acceptance to share OER was graphically presented in Figure 4.6.

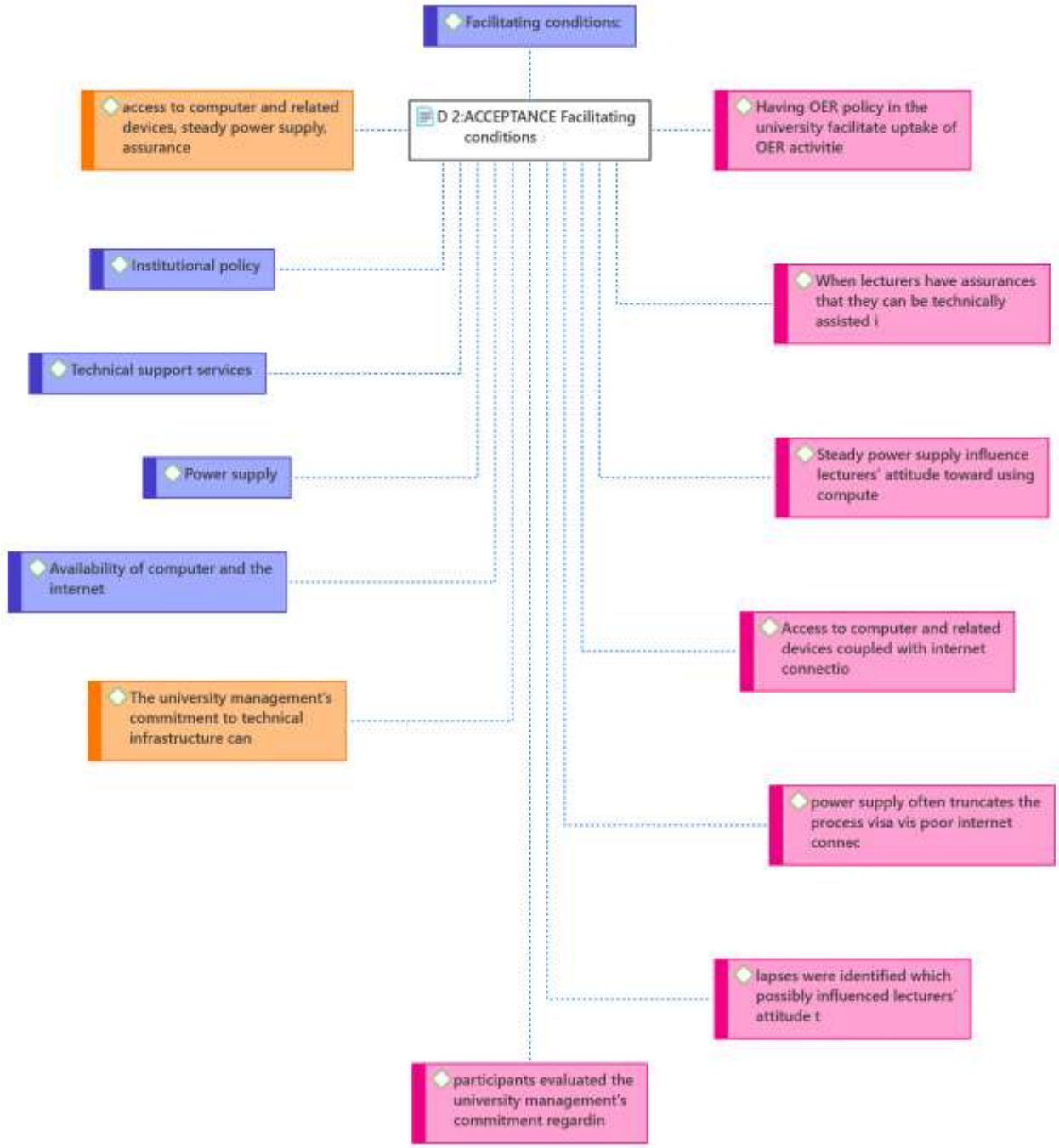


Figure 4.6: Codes and quotation network of the constructs on acceptance to share OER

To further illuminate the divergence in participants' opinions, sentiment analysis was conducted to track the preponderance of both positive, neutral and negative mentions based on codes and quotations (Appendix H). The finding showed that there are 26 paragraphs containing sentiments with 11pointing to a positive, 5 neutral and 10 negative mentions graphically illustrated in Figure 4.7.

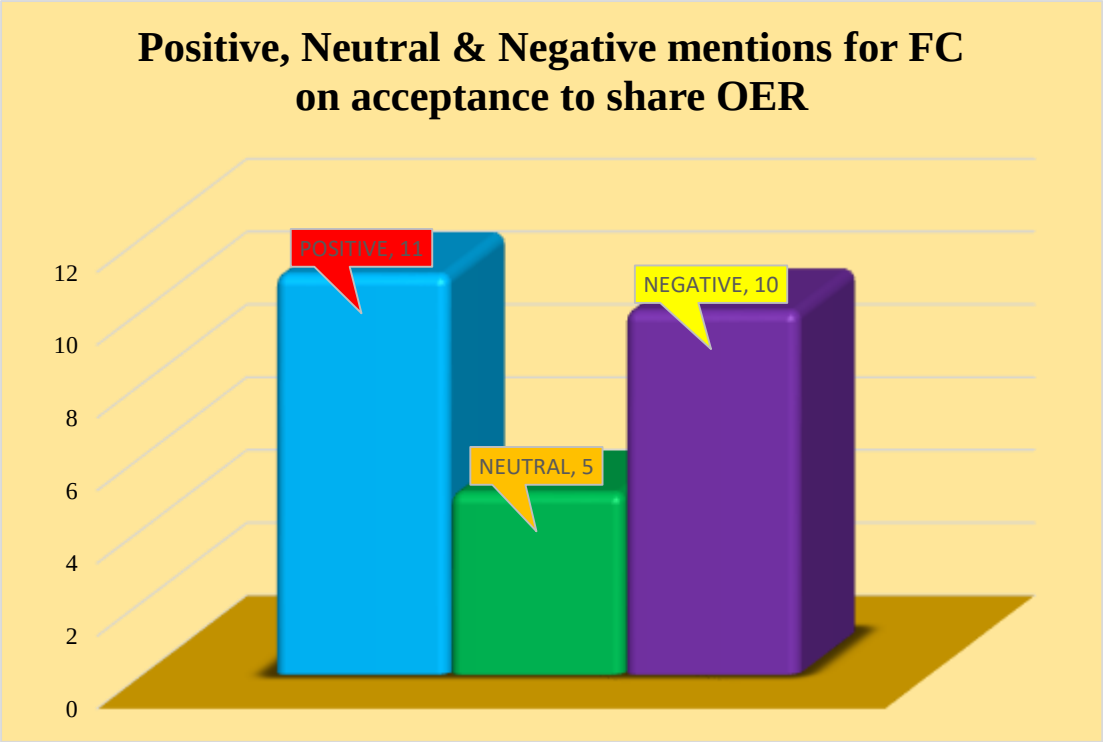


Figure 4.7: Graphic illustration of sentiment analysis.

Figure 4.7 present the sentiment analysis result in which the large occurrence of sentiments falls on positive connotation followed by negative and then neutral mentions. This implies that there is a polarity in lecturers' submissions regarding facilitating condition variable and its possibility for influencing lecturers' attitude toward knowledge sharing. The polarity in lecturers' views confirmed a segment of quantitative analysis which shows that they are satisfied with the university provisions for the uptake of OER. It has however, defy a segment which state that lecturers are sceptical in accepting OER given the fact that the university internet service is fluctuating and therefore, lecturers demand financial support either as incentives or as assistance to renew data subscription. Thus, the divergence in participants' views is in line with the reality; for positive influencers, in means they are complacent with the institutional provisions (ICT facilities, internet speed, power supply, OER policy and OER repository) to influence attitude toward using OERs. For negative influencers, it means they are not satisfied with these provisions and demand additional

services such as financial support, devices, personal internet services to influence attitude toward using OER while the neutral group are ambivalent maintaining a middle position.

4.4 Answering Research Questions for Quantitative Data (Phase Ib)

Research question six: What is the influence of performance expectancy on lecturers' use of OER in the selected Universities of North-East Nigeria?

Table 4.7 provides the mean and standard deviations of respondents' opinions on the influence of performance expectancy on lecturers' use of OER in selected universities of North-East Nigeria. The table highlights the perceptions of lecturers regarding the expected benefits and positive outcomes associated with utilizing shared OER in their teaching and research activities. The table consists of seven statements rated on a Likert scale. The mean scores ($\overline{X}$) and standard deviations (SD) are provided, indicating the average level of agreement among the respondents for each statement.

Table 4.7: Mean and standard deviations of respondents on the influence of performance expectancy on lecturers' use of OER in the selected Universities of North-East Nigeria.

S/N	Statements	N	$\bar{X}$	SD	Decision
1	Using the shared OER will enhance my teaching effectiveness.	338	3.29	1.447	Agree
2	Using the shared OER will improve the quality of my research work.	338	3.36	1.421	Agree
3	Reusing OER shared by co-lecturers will save me time in developing lecture materials.	338	3.38	1.297	Agree
4	Remixing the shared OER will improve my course development skills.	338	3.38	1.289	Agree
5	Using the shared OER will allow me to have access to current information about the courses I teach.	338	3.36	1.406	Agree
6	Using the shared OER will give me variety of resources that will increase the quality of courses I developed.	338	3.39	1.357	Agree
7	Redistributing OER will increase my academic network and sphere of influence.	338	3.30	1.384	Agree
	Cumulative mean		**3.35**		**Agree**

Key: Decision mean=3.0, N= Number in samples, $\bar{X}$ = Mean, SD= Standard Deviations

Table 4.7 shows the mean and standard deviation of respondents on the influence of performance expectancy on lecturers' use of OER in the selected Universities of North-East Nigeria. The table reveals that the mean responses to each of the items (ranges from 3.39 to 3.29) was consistently above the decision mean of 3.0. Similarly, the cumulative mean score of 3.35 was obtained for the 7 items in which item 6; "using the shared OER will give me variety of resources that will increase the quality of courses I developed", item 3; "reusing OER shared by co-lecturers will save me time in developing lecture materials" and item 4; remixing the shared OER will improve my course development skills" as the most important contributors to performance expectancy variable on lecturers' use of OER. Since, the cumulative mean is above the decision mean, this implies that respondents are in agreement with the statements. Hence, performance expectancy variable influence lecturers' use of OER in the selected Universities of North-East Nigeria.

Research question seven: What is the influence of effort expectancy on lecturers' use of OER in the selected Universities of North-East Nigeria?

Table 4.8 presents the mean and standard deviations of respondents' opinions on the influence of effort expectancy on lecturers' use of OER in selected universities of North-East Nigeria. The table sheds light on the perceptions of lecturers regarding the ease and convenience of using OER in their academic activities. The table consists of seven statements rated on a Likert scale. The mean scores ($\bar{X}$) and standard deviations (SD) are provided, indicating the average level of agreement among the respondents for each statement.

Table 4.8: Mean and standard deviations of respondents on the influence of effort expectancy on lecturers' use of OER in the selected Universities of North-East Nigeria

S/N	Statements	N	$\bar{X}$	SD	Decision
1	The flexibility of the university OER repository allows me to use my computer, tablet and mobile phone to access the shared OER.	338	3.16	1.270	Agree
2	Navigating through the university OER is with less stress.	338	3.13	1.289	Agree
3	It is easy for me to become skilful at reusing, revising and remixing OER.	338	3.22	1.305	Agree
4	I find downloading and using the shared OER easy.	338	3.29	1.265	Agree
5	Using OER will enable me to accomplish course development activities more rapidly.	338	3.37	1.292	Agree
6	I find it is easy to search for a usable OER that can suit my class.	338	3.24	1.272	Agree
7	My students do not find it challenging to download OER I shared for their use.	338	3.21	1.307	Agree
	Cumulative mean		**3.23**		**Agree**

Key: Decision mean=3.0, N= Number in samples, $\bar{X}$ = Mean, SD= Standard Deviations

Table 4.8 shows the mean and standard deviation of respondents on the influence of effort expectancy on lecturers' use of OER in the selected Universities of North-East Nigeria. The table reveals that the mean responses to each of the items (ranges from 3.16 to 3.37) was consistently above the decision mean of 3.0. Additionally, a cumulative mean score of 3.23 was obtained for the eight items in which downloading and using the shared OER was easy and enable them to accomplish course development activities more rapidly and the ease to

which searching for a usable OER that can suit their teaching courses turned out to be the most important effort expectancy variable. Since, the cumulative mean is above the decision mean, this implies that respondents are in agreement with the statements. Hence, effort expectancy has influence on lecturers' use of OER in the selected Universities of North-East Nigeria.

Research question eight: What is the impact of social influence on lecturers' use of OER in the selected Universities of North-East Nigeria?

Table 4.9 presents the mean and standard deviations of respondents' opinions on the impact of social influence on lecturers' use of OER in selected universities of North-East Nigeria. The table provides insights into the perceived influence of various social factors on the adoption and utilization of OER by lecturers. The table includes seven statements related to social influence, and respondents rated each statement on a Likert scale. The mean scores ($\bar{X}$) and standard deviations (SD) are provided, indicating the average level of agreement among the respondents for each statement.

Table 4.9: Mean and standard deviations of respondents on the impact of social influence on lecturers use of OER in the selected Universities of North-East Nigeria.

S/N	Statements	N	$\bar{X}$	SD	Decision

1	My co-lecturers in the university think I should use the shared resources on OER repository to develop my lecture notes.	338	3.03	1.284	Agree
2	My senior colleagues in the university are expecting me to adapt resources from OER repository to enrich my lecture contents.	338	3.12	1.257	Agree
3	My students in the university think I should use OER repository to share teaching resources.	338	3.27	1.248	Agree
4	My mentees in the university think I should remix variety of resources from OER for their academic guidance.	338	3.25	1.262	Agree
5	Lecturers who are important to me in the university think I should use OER to reduce the time spent in course development.	338	3.25	1.268	Agree
6	My students who have concern for computer virus think I should use OER repository as a sharing medium.	338	3.17	1.295	Agree
7	My Head of Department think I should use the shared resources on OER as directed by the university administration.	338	3.25	1.290	Agree
	Cumulative mean		**3.19**		**Agree**

Key: Decision mean=3.0, N= Number in samples, $\bar{X}$ = Mean, SD= Standard Deviations

Table 4.9 shows the mean and standard deviation of respondents on the impact of social influence on lecturers' use of OER in the selected Universities of North-East Nigeria. The table reveals that the mean response to each of the items (ranges from 3.03 to 3.27) was consistently above the decision mean of 3.0. Additionally, a cumulative mean score of 3.19 was obtained for the seven (7) items to which students, mentees, lecturers and Head of Department discerning inspiration on lecturers to use the shared resources on OER as directed by the university administration collectively contributed more to the social influence variable. Since, the cumulative mean is above the decision mean, this implies that respondents are in agreement with the statements. Hence, social influence has impact on lecturers' use of OER in the selected Universities of North-East Nigeria.

Research question nine: What is the influence of facilitating conditions on lecturers' use of OER in the selected Universities of North-East Nigeria?

Table 4.10 presents the mean and standard deviations of respondents' opinions on the influence of facilitating conditions on lecturers' use of OER in the selected universities of North-East Nigeria. The table provides insights into the perceived impact of various facilitating conditions on the adoption and utilization of OER by lecturers. The table includes six statements related to facilitating conditions, and respondents rated each statement on a Likert scale. The mean scores ($\overline{X}$) and standard deviations (SD) are provided, indicating the average level of agreement among the respondents for each statement.

Table 4.10: Mean and standard deviations of respondents on the influence of facilitating conditions on lecturers' use of OER in the selected Universities of North-East Nigeria.

S/N	Statements	N	$\overline{X}$	SD	Decision
1	I have computer and the internet skill necessary to remix and redistribute teaching resources on OER.	338	3.20	1.384	Agree
2	The availability of technical assistants stimulated me to integrate OER into my courses.	338	3.20	1.336	Agree
3	The OER policy directive encourages me to use OER.	338	3.36	1.271	Agree
4	The expected reward from the university management will encourage me to use the shared OER.	338	3.22	1.370	Agree
5	The availability of OER repository on handheld devices will encourage me to use it.	338	3.24	1.300	Agree
6	The friendliness of the OER repository interface will inspire me to use the shared resources on OER.	338	3.22	1.400	Agree
	Cumulative mean		**3.24**		**Agree**

Key: Decision mean=3.0, N, Number in samples, $\bar{X}$ = Mean, SD= Standard Deviations

Table 4.10 shows the mean and standard deviation of respondents on the influence of facilitating conditions on lecturers' use of OER in the selected Universities of North-East Nigeria. The table reveals that the mean response to each of the items (ranges from 3.20 to 3.36) was consistently above the decision mean of 3.0. Additionally, a cumulative mean score of 3.24 was obtained for the six items in which the availability of OER repository on handheld devices, the friendliness of the OER repository interface, the expected reward

from the university management and the OER policy directive collectively contributed to facilitating conditions variable for lecturers' use of OER. Since, the cumulative mean is above the decision mean, this implies that respondents are in agreement with the statements. Hence, facilitating conditions has influence on lecturers' use of OER in the selected Universities of North-East Nigeria. The overall means of the constructs on acceptance to share OER was summarized and graphically presented in a column chart Figure 4.8.

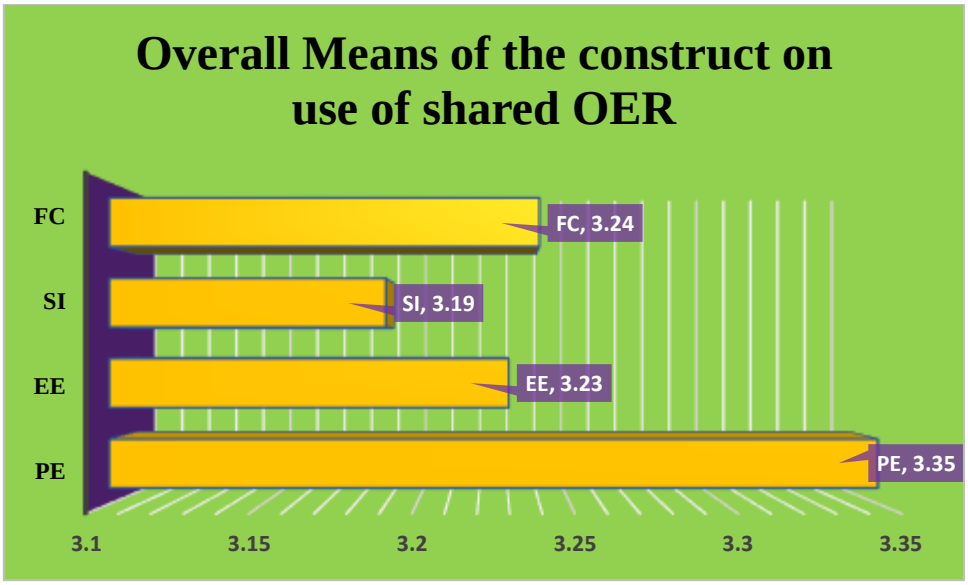


Figure 4.8: Summary of the overall means of the constructs on acceptance to share OER.

The column chart in figure 4.8 displayed the constructs on the y-axis and the corresponding means on the x-axis in which the taller columns indicated a higher means while the shorter columns indicated the lowest mean response. Similarly, the cumulative mean responses were displayed on top of each column for more illustration.

4.5 Answering Research Questions for Qualitative Data (Phase IIb).

Research question 10: How do the determinants influence lecturers' attitudes toward use of shared OER in the selected Universities of North-East Nigeria?

Performance Expectancy: the participants were asked to comment on "How do you consider *lecturers' expected productivity outcomes* as a result of engaging with OER will influence your attitude toward using the shared lecture notes, streamed videos and research findings?" The result from the interview analysis revealed that using OER have the capacity to increase lecturers' productivity in the university. Accordingly, continued usage invariably stimulates attitudinal change especially now that lecturer's expectation for an increased job performance and career progression remained clear. For instance, many lecturers now visit the OER repository, download and modify resources to meet the requirement of their students' needs. An excerpt from a participant stated that;

> *"Yes, job performance expectation from the use of OER had really influence lecturers' attitude towards sharing and using the shared OER. This is because, in my institution, the management want to see the number of articles contributed by each lecturer within a specified timeframe for upward promotion."*

From the expert's submission, a number of related themes emerged mirroring performance expectancy to include; (1) increase job performance (2) career progression (3) skill development, and (4) reduce time for resource development, as shown in Table 4.11a.

Table 4.11a: Thematic analysis and description of emerging themes for performance expectancy construct

S/N	Theme	Description	Significant findings
1	Increase job performance	As OER is put to use by lecturers, job performance increases exponentially.	Performance expectation of lecturers from OER usage influences their attitude toward using the shared OER.

2	Expectation for career progression	Lecturers stand to enjoy promotion from sharing or using the shared OER.	Expectation for career progression stimulate lecturers' attitude toward continue usage of OER.
3	Skills development	Development of lecturers' skills from using OER.	Expectation for skill development stimulate lecturers' positive attitude toward using OER.
4	Reduce time for resource development	Resources available on the repository reduce lecturers' time for developing new ones.	Lecturers expect that the shared OER on the university repository will reserve their energy and time for developing new ones.

Source: Field interview, (2021).

Table 4.11a revealed that expectation for an increased job performance, career progression, skill development and lecturers time and energy reserved for developing new resources for teaching jointly influence attitude toward knowledge sharing activities on OER repository. The codes and quotation network of the constructs on use of shared OER was graphically presented in Figure 4.9.

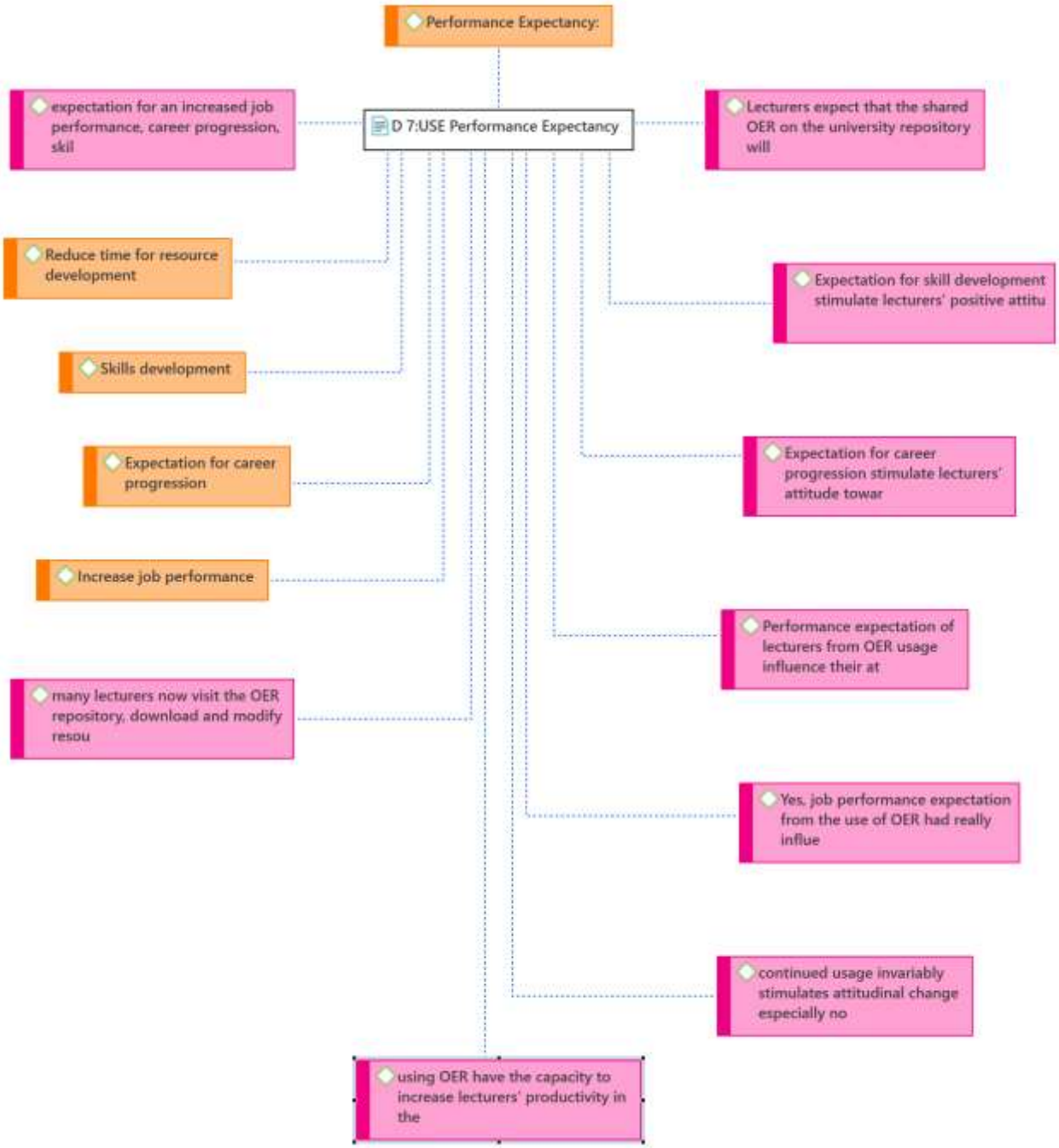


Figure 4.9: Codes and quotation network of the constructs on use of shared OER

Effort Expectancy: The participants were asked; In what important ways do you think *lecturers expected usage capabilities* to influence their attitude toward the use of shared OER? Insight from the interviews revealed that lecturers are not hesitant to invest less effort in order to retrieve a huge benefit from using OER. This is because, OER activities are analogous to the traditional computer and internet usage they are familiar with in their

routine work. Therefore, it was the participants' believed that university lecturers' attitude toward using OER is positive. An excerpt from a participant stated that;

> *"The less effort a staff invest in getting through the activities of OER, the more positive their attitude will be. This is because, effort expectancy cut across lecturers' technology skills, internet skills and the financial commitment for purchasing internet data, fuelling generator and paying typist and computer operators. Many staff are reluctant to engage in OER activities if they had to spend time and money because, academic staff do not have the two in abundant. However, with what I saw in the University OER repository, every staff that is familiar with computer and the internet can download OER, revise it to meet his students needs and reuse it for teaching his course".*

Based on insight gained from the participants' submission, a number of related themes emerged from the data reflecting effort expectancy to include; (1) simplicity of the OER repository interface (2) resources for powering the technology (3) time to revise and remix OER and (4) availability and strength of internet data, as shown in Table 4.11b.

Table 4.11b: Thematic analysis and description of emerging themes for effort expectancy construct

	Theme	Description	Significant findings
1	Simplicity of the OER repository interface	Straightforwardness of the OER repository.	The OER repositories require less effort to navigate; upload and download resources for use.
2	Resources for powering the technology	The ease to which alternative source of power can be accessed.	Access to alternative sources of power is challenging and that negatively influence lecturers' attitude to use OER as it requires powering technology.
3	Time to revise and remix OER	Developing new OER to meet course requirement.	Customizing OER to meet the needs of lecturers' course requirement require time. The busy lecturers time is limited and that negatively influence them from using OER.
4	Availability and strength of internet data	Signal strength, internet speed and device configuration	The strength of the university internet is poor! Lecturers had to supplement with their personal subscription which affect their attitude to using OER

Source: Field interview, (2021).

Table 4.11b revealed that the OER repositories require less effort to navigate, nevertheless, access to alternative sources of power, the time to customize OER to meet the needs of lecturers' course requirement and the poor nature of the university internet signals negatively influence lecturers' attitude toward knowledge sharing activities on OER repository. The finding revealed both positive and negative influences on lecturers' attitude toward knowledge sharing activities on OER repository. Accordingly, the codes and quotation network of the constructs on use of shared OER was graphically presented in figure 4.10 with themes on the right-hand side and the quotations on the left-hand side.

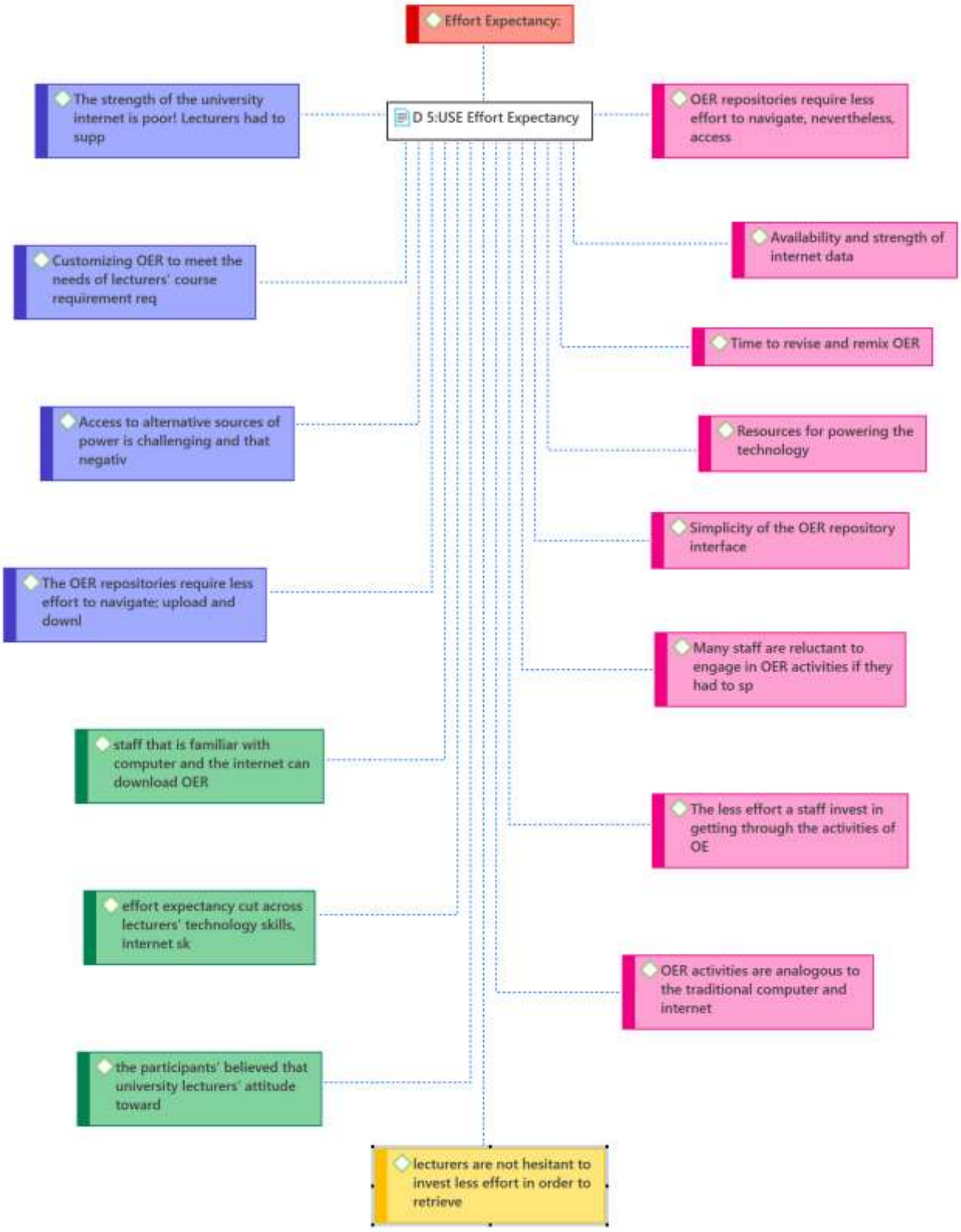


Figure 4.10: Codes and quotation network of the constructs on use of shared OER.

To further clarify the positive, neutral and negative mentions on the construct, a sentiment analysis was conducted to find the direction of the statements (Appendix I) and the result is summarized and graphically presented in Figure 4.11.

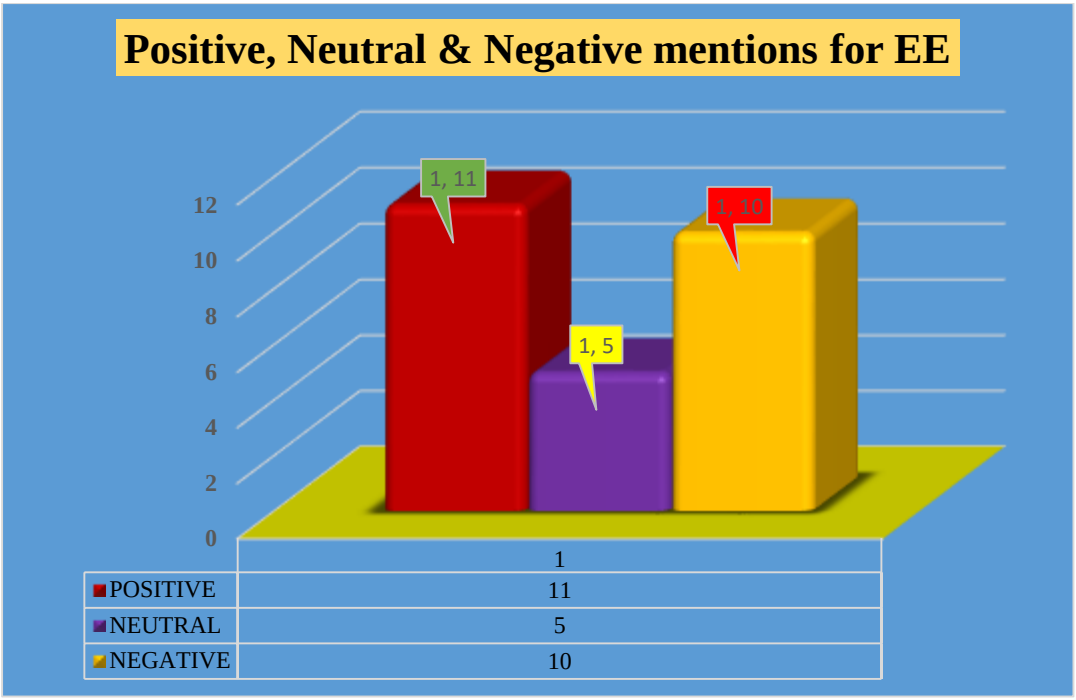


Figure 4.11: Graphic illustration of sentiment analysis on Effort Expectancy

The finding showed that there are 26 paragraphs containing sentiments pointing to a positive, negative and neutral positions with a large occurrence on a positive connotation. The finding implied that the first majority of participants' mention positive statements eleven times, the second majority mention negative statements ten times while the last category decided to maintain a neutral position. The polarity in participants' views is interpreted to mean effort expectancy variable positively influence a category of lecturers' attitude toward knowledge sharing and negatively influence a category.

Social Influence: the interviewed participants were informed that "the objective of OER is promoting the idea of open exchange and collaborative participation. How do you consider *lecturers' social dispositions* such as opinions of colleagues, faculty applaud and peer approval to stimulate a positive attitude toward the use of shared OER?" Their responses paralleled how a variety of social influence factors inspired lecturers to develop a positive attitude toward using the shared OER for their course development and personal research. An excerpt from a participant stated that;

> *"We first hear it from the university management through a formal communication to faculty members directing us to comply with the policy. We were trained on how to use it and many colleagues had already shared their resources on it including the senior ones. So, the management, senior colleagues and the students expect total compliance. Within few months, the repository was filled to the brim in which the culture remained "how many papers were shared, by who, in which department, faculty et cetra. Thus, the OER movement was socially conspired; one has no option than to register his presence in the repository by sharing and of course using the shared resources to develop course materials for students learning."*

Based on the excerpt from the participants' submission, a number of associated themes appeared from the data paralleling social influence construct to include; (1) department influence, (2) university wide influence (3) students influence, as shown in Table 4.11c.

Table 4.11c: Thematic analysis and description of emerging themes for performance expectancy construct

	Theme	Description	Significant findings
1	Department influence	Colleagues in the department felt the need to implement the use of OER to raise the reputation of the department.	Departmental colleagues in most universities influence lecturers' attitude to use OER, first; to comply with the policy, second; to increase chances for promotion and third; to assist their students.
2	University wide influence	How lecturers influence each other to use OER.	The overall expectation of lecturers from various faculties and departments on OER movement influenced their attitude to implement OER.
3	Students' influence	students anticipating lecturers' submissions of lecture notes, PowerPoint slides and relevant videos on their courses from the repository.	The social expectations from students influence lecturers to use OER to develop customize resources for their use.

Source: Field interview, (2021).

Table 4.11c revealed that colleagues in the department, overall expectation of lecturers from various faculties and departments on OER movement and the social expectations from students conjointly influence lecturers' attitude toward knowledge sharing activities on OER repository. The finding confirmed the earlier position of quantitative finding that the construct "social influence" stimulates lecturers use of shared OER. The codes and quotation network of the constructs and how these inter-relate on use of shared OER was graphically presented in Figure 4.12.

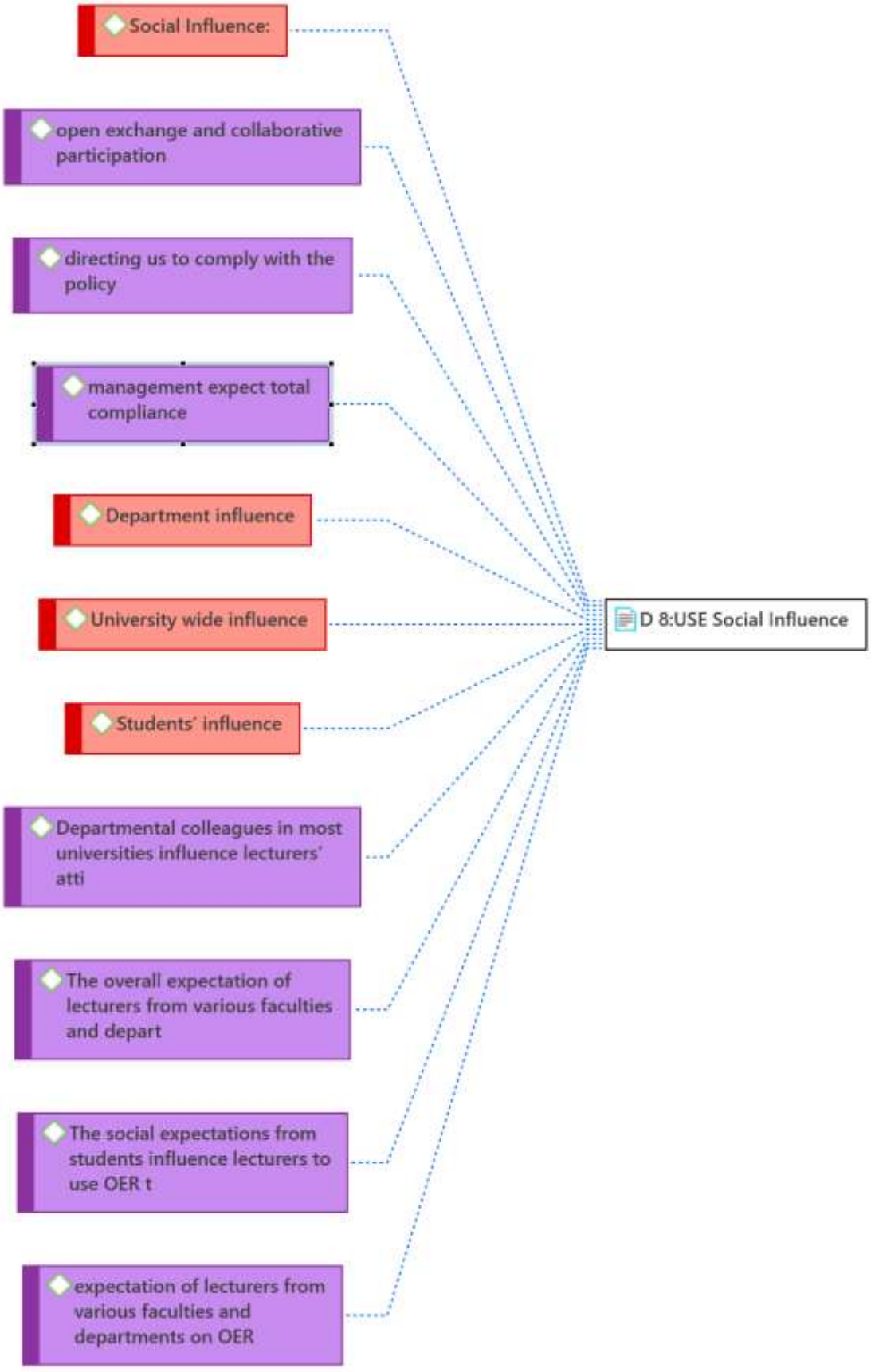


Figure 4.12: Codes and quotation network of the constructs on use of shared OER

Facilitating conditions: the interviewed participants were asked; In your experience as a university lecturer, in what ways do you think infrastructural facilities put in place for OER uptake in the university are enough to influence lecturers' attitude toward the use of shared OER? They evaluated the university management's commitment in support of OER use and had narrated both positive and negative factors that might influence lecturers' attitude toward a wider implementation of OER. For instance, lecturers already familiar with computer and internet usage find it less challenging to implement OER, however, those who are not technology savvy find it difficult to engage with OER activities. An excerpt from the interview participants stated that;

> *"Apart from what the university might provide such as OER repository, technical personnel and policy to support its implementation; lecturers had to be technology savvy, morally obliged to participate in increasing access to learning resources and commitment to service. Presently, the university OER is functional, institutional policy is in place, repository experts are there to assist, however, challenges for electricity and internet speed abound which impede lecturers' attitude to using OER for a large scale."*

Thus, factors regarding conditions for the implementation of OER emerged from the participants submissions reflecting on facilitating conditions include; (1) possession of computer and internet skills, (2) repository infrastructure (3) technical support services (4) financial support and (5) institutional OER policy, as shown in Table 4.11d.

Table 4.11d: Thematic analysis and description of emerging themes for facilitating conditions construct

	Theme	Description	Significant findings
1	Possession of computer and internet skills	Ability to use computers and internet.	Most lecturers use computer and internet as such, their attitude toward using the share OER is positive.
2	Repository infrastructure	OER platform developed at university level.	All the universities in the region developed OER repositories, its availability facilitate attitude toward using it.
3	Technical support services	An assistant given to lecturers when facing technical challenges.	Technical assistants are provided to trouble shoot issues emanating from its use. This provision influence lecturers' attitude to use the share OER.
4	Financial support	Incentives given to lecturers to facilitate implementation	Currently, no financial support is given to lecturers either as incentives or as assistance to buy data in absence of university internet services. This negatively influence lecturers' attitude toward using OER in a large scale.
5	Institutional policy	Existence of policy framework in the university.	The OER policy is provided and has given lecturers a courage to implement OER activities.
6	Legal and technical openness	Providing permissions legally and technically.	The provision of legal and technical openness influence lecturers' attitude toward using OER.

Source: Field interview, (2021).

Table 4.11d revealed that most lecturers use computer and internet, the universities in the region developed OER repositories, technical assistants are provided to trouble shoot issues emanating from OER use and institutional OER policies are provided to guide usage. All these conjointly influence lecturers' attitude toward knowledge sharing activities on OER repository. However, absence of financial support to lecturers either as incentives or as assistance to subscribe data in place of university internet services has negatively influence

lecturers' attitude toward using OER in a large scale. The codes and quotation network of the constructs on use of shared OER was graphically presented in Figure 4.13.

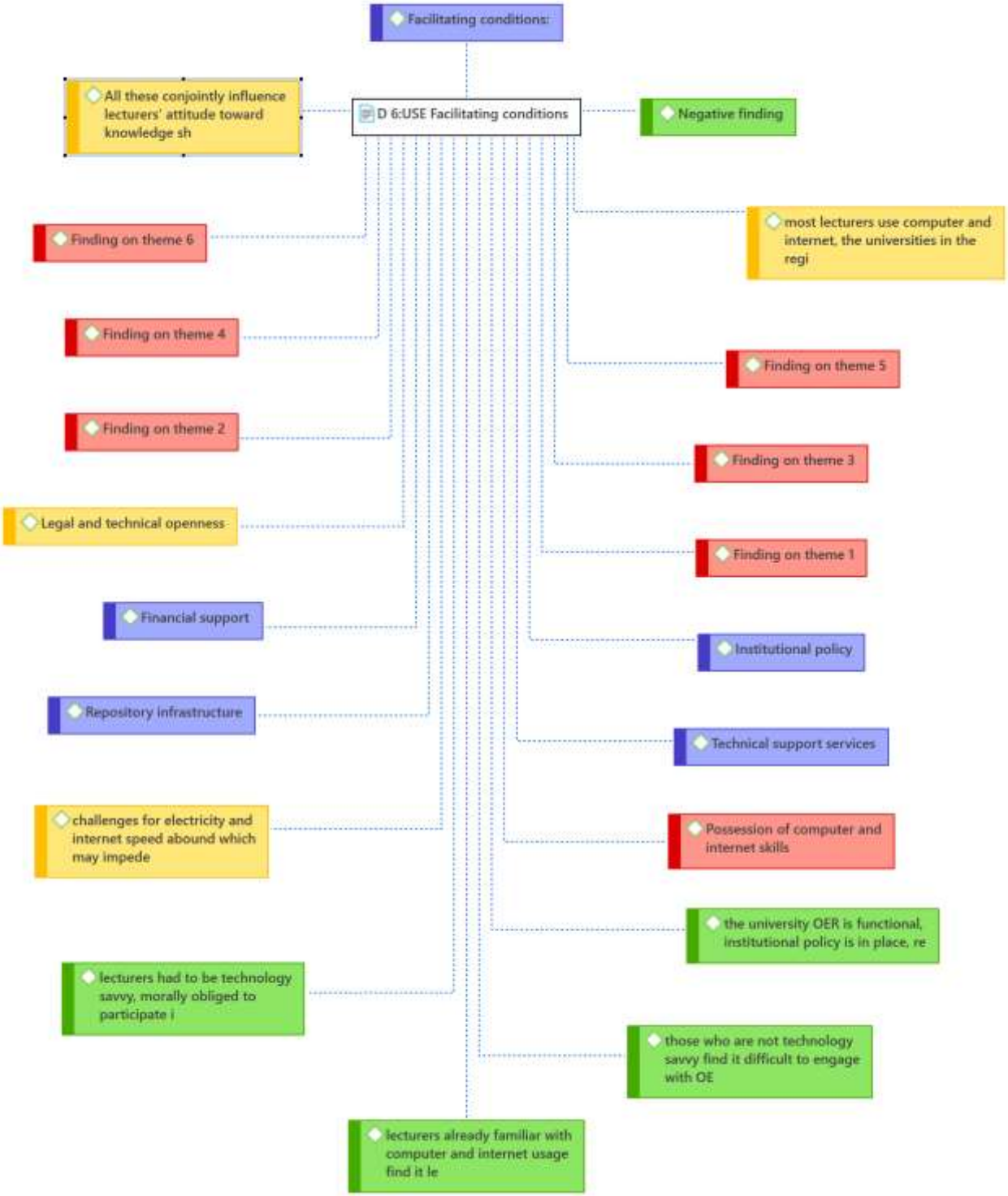


Figure 4.13: Codes and quotation network of the constructs on use of shared OER

To further clarify the divergence in lecturers' opinions, sentiment analysis was conducted to track the preponderance of both positive, neutral and negative mentions based on codes and quotations (Appendix J). The finding showed that there are 33 paragraphs containing sentiments with 11pointing to a positive, 9 neutral and 13 negative mentions graphically illustrated in Figure 4.14.

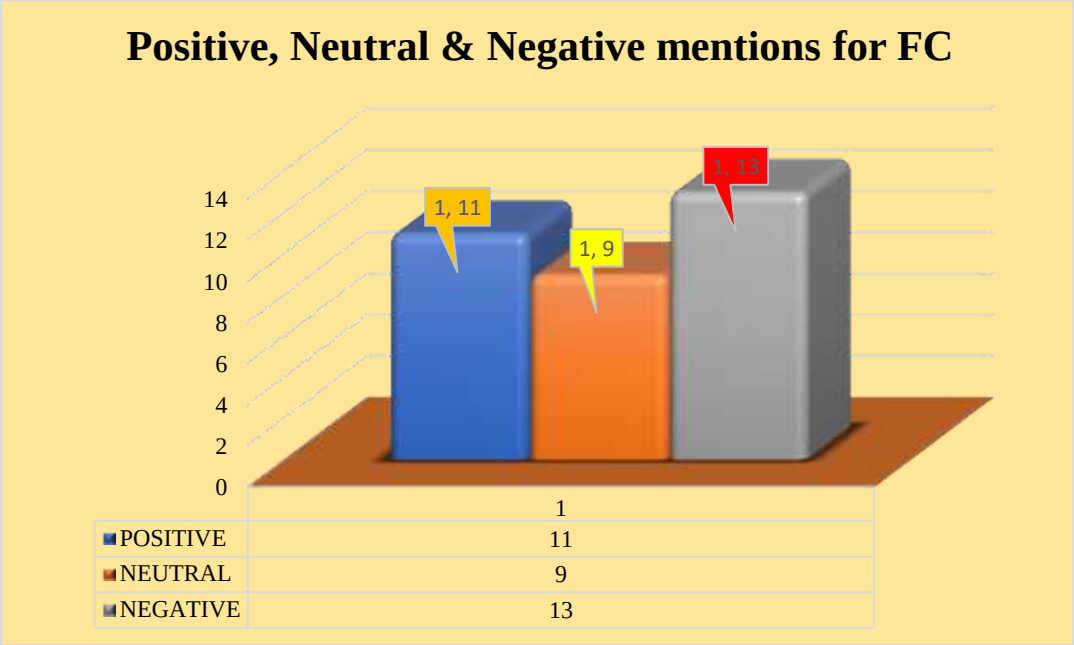


Figure 4.14: Graphic illustration of sentiment analysis on facilitating conditions

Figure 4.14 present the sentiment analysis result in which the large occurrence of sentiments falls on a negative connotation followed by positive and then neutral mentions. This implies that there is a polarity in lecturers' submissions regarding facilitating condition variable and its possibility for influencing lecturers' attitude toward knowledge sharing. This polarity in lecturers' views confirmed a segment of quantitative analysis which shows that they are satisfied with the university provisions for the uptake of OER. It has however, defy a segment which state that lecturers are sceptical in using OER given the fact that the university internet service is epileptic and therefore, lecturers demand financial support either as incentives or as assistance to buy data. Thus, the divergence in participants' views

is in line with the present condition of universities; for positive influencers, in means they are complacent with the institutional provisions (ICT facilities, internet speed, power supply, OER policy and OER repository) to influence attitude toward using OERs. For negative influencers, it means they are not satisfied with these provisions and demand additional services such as financial support, devices, personal internet services to influence attitude toward using OER.

4.6 Testing Null Hypotheses

To test the proposed null hypotheses, multiple sequential regression analysis was employed to determine the causal relationship between the dependent variables (acceptance to share OER and the use of shared OER) and four independent variables (Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions).

Hypothesis one: Performance Expectancy (PE) would not influence lecturers' acceptance to share OER in the selected Universities of North-East Nigeria.

To test hypothesis one, a sequential multiple linear regression analysis was carried out to investigate whether performance expectancy would significantly predict university lecturer's acceptance to share OER. The model summary of the constructs was first examined with coefficient of determination (R^2) as presented in Table 4.12.

Table 4.12: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.658a	.432	.431	5.453
2	.675b	.456	.453	5.347
3	.705c	.497	.493	5.147
4	.706d	.499	.493	5.148

Key:

a. Predictors: (Constant), Performance Expectancy
b. Predictors: (Constant), Performance Expectancy, Effort Expectancy
c. Predictors: (Constant), Performance Expectancy, Effort Expectancy, Social Influence
d. Predictors: (Constant), Performance Expectancy, Social Influence
e. Dependent Variable: Acceptance to Share OER

Table 4.12 presented the model summary of the constructs which shows the strength of the bivariate relationship between performance expectancy and lecturers' acceptance to share OER at the end of step I. The result showed a strong linear correlation between performance expectancy of lecturers with acceptance to share OER R = .658 and R^2 = .43, (adjusted R^2 = .43), accounting for 43% of the total variance explained by the independent variables. The adjusted R^2 of .43 indicated that more than one third of the variability in acceptance to share OER is predicted by performance expectancy of lecturers. Chin (1998) recommended R^2 values for endogenous latent variables as: 0.67 (substantial), 0.33 (moderate), 0.19 (weak). Thus, the calculated R^2 value for this construct is classified as moderate and is considered acceptable.

In order to test the validity of multiple regression model, a statistical significance of the overall regression model was examined in table 4.13 to ascertain if the explained variance is not due chance.

Table 4.13: Analysis of Variance (ANOVA): Testing for overall model fitness

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7612.603	1	7612.603	256.026	.000[b]
	Residual	9990.510	336	29.734		
	Total	17603.112	337			

a. Dependent Variable: Acceptance to Share OER
b. Predictors: (Constant), Performance Expectancy

Table 4.13: Analysis of Variance was run to examine the statistical significance of the overall regression model on the influence of Performance Expectancy (PE) on lecturers' acceptance to share OER. The significance level of *R* is found in the ANOVA table with $F(1, 336) = 256.026$, $p < .000$ implying a statistically significant influence of Performance Expectancy (PE) on lecturers' acceptance to share OER. Thus, the explained variance is not due to chance. Therefore, contrary to hypotheses one raised that PE would not influence acceptance to share OER, the finding revealed that PE has moderate influence on acceptance. Thus, hypothesis one was statistically not supported.

Additionally, the regression coefficient for the constructs was also examined in terms of beta weight in order to understand the direction of the relationship and the contribution of each predictor variable on the outcome variable. This was presented in Table 4.14.

Table 4.14 Regression coefficient for the constructs

		Unstandardized Coefficients		Standardized Coefficients		
Model	**Constructs**	**B**	**Std. Error**	**Beta (β)**	**t-values**	**Sig.**
1	(Constant) Acceptance of OER	8.012	.935		8.572	.000
	Performance Expectancy	.604	.038	.658	16.001	.000
2	(Constant) Acceptance of OER	5.648	1.108		5.100	.000
	Performance Expectancy	.495	.047	.539	10.561	.000
	Effort Expectancy	.194	.051	.194	3.802	.000
3	(Constant) Acceptance of OER	4.062	1.108		3.665	.000
	Performance Expectancy	.382	.050	.416	7.652	.000
	Effort Expectancy	.063	.055	.063	1.134	.257
	Social Influence	.239	.046	.306	5.246	.000
4	(Constant) Acceptance of OER	3.859	1.131		3.411	.001
	Performance Expectancy	.371	.052	.403	7.175	.000
	Effort Expectancy	.042	.060	.042	.709	.479
	Social Influence	.230	.047	.294	4.915	.000
	Facilitating Condition	.050	.056	.053	.899	.369

a. Dependent Variable: AS

Table 4.14 shows the regression coefficient of the bivariate relationship between performance expectancy and acceptance to share OER at the end of step I. Based on the beta weights, the regression coefficient is positively and significantly correlated with the criterion; acceptance to share OER ($\beta = 0.658$; $t = 16.001$; $p = 0.000$), indicating that performance expectancy has a predictive capacity to stimulate lecturer's acceptance to share their resources on OER repository.

Hypothesis two: Effort Expectancy (EE) would not influence lecturers' acceptance to share OER in the selected Universities of North-East Nigeria.

To test hypothesis two, additional second predictor variable "Effort expectancy" was added to the model at the end of step II to determine whether it would significantly predict university lecturer's acceptance to share OER. The model summary of the constructs was

examined with coefficient of determination (R^2) as presented in the second row of table 4.12 which shows the strength of the bivariate relationship between effort expectancy and lecturers' acceptance to share OER. The bivariate correlation showed a strong linear relationship between effort expectancy of lecturers with acceptance to share OER; R = .675 and R^2 = .456, (adjusted R^2 = .45), accounting for 45% of the total variance explained by the independent variable. The adjusted R^2 of .45 indicated that more than one third of the variability in acceptance to share OER is predicted by effort expectancy of lecturers. To test the validity and the statistical significance of the overall regression model and to ascertain if the explained variance is not due to chance, analysis of variance was presented in Table 4.15.

Table 4.15: Analysis of Variance (ANOVA): Testing for overall model fitness

Model		Sum of Squares	df	Mean Square	F	Sig.
2	Regression	8025.865	2	4012.933	140.367	.000[c]
	Residual	9577.247	335	28.589		
	Total	17603.112	337			

a. Dependent Variable: Acceptance to Share OER

c. Predictors: (Constant), Effort Expectancy

Table 4.15: Analysis of Variance was run to examine the statistical significance of the overall regression model on the influence of Effort Expectancy (EE) on lecturers' acceptance to share OER. The result showed a statistically significant influence of Effort Expectancy (EE) on lecturers' acceptance to share OER, F (2, 335) = 140.367, p < .000. This implies that the explained variance is not due to chance. Thus, hypothesis two is statistically not supported and it is confirmed that β_2 is different from zero.

An examination of regression coefficient of the bivariate relationship between effort expectancy and acceptance to share OER is presented at the end of step II of table 4.14 in terms of beta weights. Based on the beta weights, the regression coefficient is positively and significantly correlated with the criterion; acceptance to share OER (β = 0.194; t =

3.802; p = 0.000), indicating that effort expectancy has a predictive capacity to stimulate lecturer's acceptance to share their resources on OER repository.

Hypothesis three: Social Influence (SI) would not influence lecturers' acceptance to share OER in the selected Universities of North-East Nigeria.

To test hypothesis three, additional third predictor variable "social influence" was added to the model at the end of step III to determine whether it would significantly predict university lecturer's acceptance to share OER. The model summary of the constructs was examined with coefficient of determination (R^2) as presented in the third row of table 4.12 which shows the strength of the bivariate relationship between social influence and lecturers' acceptance to share OER. The bivariate correlation showed a strong linear relationship between social influence of lecturers with acceptance to share OER; R = .705 and R^2 = .497, (adjusted R^2 = .493), accounting for 49% of the total variance explained by the independent variable. The adjusted R^2 of .497 indicated that two third of the variability in acceptance to share OER is predicted by social influence of lecturers. To test the validity and the statistical significance of the overall regression model and to ascertain if the explained variance is not due to a random, analysis of variance was presented in Table 4.16.

Table 4.16: Analysis of Variance (ANOVA): Testing for overall model fitness

Model		Sum of Squares	df	Mean Square	F	Sig.
3	Regression	8754.946	3	2918.315	110.160	.000[d]
	Residual	8848.167	334	26.492		
	Total	17603.112	337			

a. Dependent Variable: Acceptance to Share OER

d. Predictors: (Constant), Social Influence

Table 4.16: Analysis of Variance was run to examine the statistical significance of the overall regression model on the impact of Social Influence (SI) on lecturers' acceptance to

share OER. The result showed a statistically significant impact of Social Influence on lecturers' acceptance to share OER, F (3, 334) = 110.160, p < .000. This implies that the explained variance is not due to chance. Thus, hypothesis three is statistically not supported and it is confirmed that β_3 is different from zero.

Examination of regression coefficient of the bivariate relationship between social influence and acceptance to share OER is presented at the end of step III of table 4.14 in terms of beta weights. Based on the beta weights, the regression coefficient is positively and significantly correlated with the criterion; acceptance to share OER (β = 0.306; t = 5.246; p = 0.000), indicating that social influence has a predictive capacity to stimulate lecturer's acceptance to share their resources on OER repository. Simply put, the more university lecturers are influenced by the activities of their colleagues on OER repositories, the greater the chance for acceptance to share OER.

Hypothesis four: Facilitating Conditions (FC) would not influence lecturers' acceptance to share OER in the selected Universities of North-East Nigeria.

To test hypothesis four, additional fourth predictor variable "facilitating conditions" was added to the model at the end of step IV to determine whether it would significantly predict university lecturer's acceptance to share OER. The model summary of the constructs was examined with coefficient of determination (R^2) as presented in the fourth row of table 4.12 which shows the strength of the bivariate relationship between facilitating conditions and lecturers' acceptance to share OER. The bivariate correlation showed a strong linear relationship between facilitating conditions of lecturers with acceptance to share OER; R = .706 and R^2 = .499, (adjusted R^2 = .493), accounting for 49% of the total variance explained by the independent variable. The adjusted R^2 of .493 indicated that two third of the variability in acceptance to share OER is predicted by facilitating conditions variable. To test the validity and the statistical significance of the overall regression model and to

ascertain if the explained variance is not due to chance, analysis of variance was presented in Table 4.17.

Table 4.17: Analysis of Variance (ANOVA): Testing for overall model fitness

Model		Sum of Squares	df	Mean Square	F	Sig.
4	Regression	8776.352	4	2194.088	82.775	.000e
	Residual	8826.761	333	26.507		
	Total	17603.112	337			

a. Dependent Variable: Acceptance to Share OER

e. Predictors: (Constant), Social Influence

Table 4.17: Analysis of Variance was examined to establish the statistical significance of the overall regression model on the influence of Facilitating Conditions (FC) on lecturers' acceptance to share OER. The result showed a statistically significant influence of facilitating conditions on lecturers' acceptance to share OER, F (4, 333) = 82.775, $p < .000$. This implies that the explained variance is not due to chance. Thus, hypothesis four is not supported and it is confirmed that β_4 is different from zero.

Additionally, regression coefficient of the bivariate relationship between facilitating conditions and acceptance to share OER is examined in terms of beta weights and is presented at the end of step IV of table 4.14. Based on beta weights, the regression coefficient is positive but not significantly correlated with the criterion; acceptance to share OER ($\beta = .053$; $t = .899$; $p = 0.369$), indicating that facilitating conditions does not have a predictive capacity to stimulate lecturer's acceptance to share their resources on OER repository. Simply put, as university lecturers doubt the availability of technical infrastructure which represents the university's entire collection of hardware, software, networks, power supply, facilities and related equipment, the poor the chance for their overall acceptance to share OER.

Hypothesis five: Performance Expectancy (EE) would not influence lecturers' use of OER in the selected Universities of North-East Nigeria.

To test hypothesis five, a sequential multiple linear regression analysis was carried out to investigate whether performance expectancy would significantly predict university lecturer's use of OER. The model summary of the constructs was first examined with coefficient of determination (R^2) as presented in Table 4.18.

Table 4.18: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.696a	.484	.483	4.676
2	.736b	.542	.539	4.412
3	.752c	.565	.561	4.305
4	.763d	.582	.577	4.230

Key:

f. Predictors: (Constant), Performance Expectancy
g. Predictors: (Constant), Performance Expectancy, Effort Expectancy
h. Predictors: (Constant), Performance Expectancy, Effort Expectancy, Social Influence
i. Predictors: (Constant), Performance Expectancy, Social Influence
j. Dependent Variable: Use of Shared OER

Table 4.18 presented the model summary of the constructs which shows the strength of the bivariate relationship between performance expectancy and lecturers' use of shared OER at the end of step I. The result showed a strong linear correlation between performance expectancy of lecturers with use of shared OER R = .696 and R^2 = .484, (adjusted R^2 = .48), accounting for 48% of the total variance explained by the independent variable. The adjusted R^2 of .48 indicated that more than one third of the variability in the use of shared OER is predicted by performance expectancy of lecturers. Chin (1998) recommended R^2 values for endogenous latent variables as: 0.67 (substantial), 0.33 (moderate), 0.19 (weak). Thus, the calculated R^2 value for this construct is classified as moderate and is considered acceptable.

To test the validity, the statistical significance of the overall regression model and to ascertain if the explained variance is not due to a random, as presented in Table 4.19.

Table 4.19: Analysis of Variance (ANOVA): Testing for overall model fitness

Model		Sum of Squares	df	Mean Square	F-value	Sig.
1	Regression	6893.726	1	6893.726	315.286	.000b
	Residual	7346.629	336	21.865		
	Total	14240.355	337			

a. Dependent Variable: Use of Shared OER
b. Predictors: (Constant), Performance Expectancy

Table 4.19: Analysis of Variance was run to examine the statistical significance of the overall regression model on the influence of Performance Expectancy (PE) on lecturers' use of shared OER. The significance level of *R* is found in the ANOVA table with F (1, 336) = 315.286, $p < .000$ implying a statistically significant influence of Performance Expectancy (PE) on lecturers' use of shared OER. Thus, the explained variance is not due to a random (that is, not by chance) and hypothesis five is not supported and it is accepted that β_1 is different from zero.

Furthermore, the regression coefficient for the constructs was also examined in terms of beta weight and statistical significance in order to understand the direction of the relationship and the contribution of each predictor variable on the outcome variable. This was presented in Table 4.20.

Table 4.20 Regression coefficient for the constructs

Model	Constructs	Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta (β)**	**t-values**	**Sig. (p-value)**
1	(Constant) Acceptance of OER	4.912	.861		5.705	.000
	Performance Expectancy	.646	.036	.696	17.756	.000
2	(Constant) Acceptance of OER	3.149	.857		3.677	.000
	Performance Expectancy	.377	.054	.406	7.004	.000
	Effort Expectancy	.352	.054	.377	6.507	.000
3	(Constant) Acceptance of OER	2.635	.844		3.121	.002
	Performance Expectancy	.292	.056	.314	5.198	.000
	Effort Expectancy	.251	.058	.269	4.331	.000
	Social Influence	.200	.047	.242	4.241	.000
4	(Constant) Acceptance of OER	2.124	.842		2.524	.012
	Performance Expectancy	.234	.057	.252	4.073	.000
	Effort Expectancy	.186	.060	.199	3.107	.002
	Social Influence	.170	.047	.206	3.620	.000
	Facilitating Condition	.204	.057	.200	3.598	.000

a. Dependent Variable: AS

Table 4.20 shows the regression coefficient of the bivariate relationship between performance expectancy and use of shared OER at the end of step I. Based on the beta weights, the regression coefficient is positively and significantly correlated with the criterion; use of shared OER ($\beta = 0.696$; $t = 17.756$; $p = 0.000$), indicating that performance expectancy has a predictive capacity to stimulate lecturers to use the shared resources on OER repository.

Hypothesis six: Effort Expectancy (EE) would not influence lecturers' use of OER in the selected Universities of North-East Nigeria.

To test hypothesis six, additional second predictor variable "Effort expectancy" was added to the model at the end of step II to determine whether it would significantly predict university lecturer's use of shared OER. The model summary of the constructs was

examined with coefficient of determination (R^2) as presented in the second row of table 4.16 which shows the strength of the bivariate relationship between effort expectancy and lecturers' use of shared OER. The bivariate correlation showed a strong linear relationship between effort expectancy of lecturers with use of shared OER; R = .736 and R^2 = .542, (adjusted R^2 = .539), accounting for 53% of the total variance explained by the independent variable. The adjusted R^2 of .542 indicated that more than half of the variability in the use of shared OER is predicted by effort expectancy of lecturers. To test the validity and the statistical significance of the overall regression model and to ascertain if the explained variance is not due to a random, analysis of variance was presented in Table 4.21.

Table 4.21: Analysis of Variance (ANOVA): Testing for overall model fitness

Model		Sum of Squares	df	Mean Square	F	Sig.
2	Regression	7718.030	2	3859.015	198.207	.000c
	Residual	6522.325	335	19.470		
	Total	14240.355	337			

a. Dependent Variable: Use of Shared OER
c. Predictors: (Constant), Effort Expectancy

Table 4.21: Analysis of Variance was run to examine the statistical significance of the overall regression model on the influence of Effort Expectancy (EE) on lecturers' use of shared OER. The result showed a statistically significant influence of Effort Expectancy (EE) on lecturers' use of shared OER, F (2, 335) = 198.207, $p < .000$. This implies that the explained variance is not due to chance. Thus, hypothesis six is not supported and it was established that β_2 is different from zero.

An examination of regression coefficient of the bivariate relationship between effort expectancy and use of shared OER is presented at the end of step II of table 4.18 in terms

of beta weights. Based on the beta weights, the regression coefficient is positively and significantly correlated with the criterion; use of shared OER (β = 0.377; t = 6.507; p = 0.000), indicating that effort expectancy has a predictive capacity to stimulate lecturer's use of shared resources on OER repository.

Hypothesis seven: Social Influence (SI) would not influence lecturers' use of OER in the selected Universities of North-East Nigeria.

To test hypothesis seven, additional third predictor variable "social influence" was added to the model at the end of step III to determine whether it would significantly predict university lecturer's use of shared OER. The model summary of the constructs was observed with coefficient of determination (R^2) as presented in the third row of table 4.20 which shows the strength of the bivariate relationship between social influence and lecturers' use of shared OER. The bivariate correlation showed a strong linear relationship between social influence of lecturers with use of shared OER; R = .752 and R^2 = .565, (adjusted R^2 = .561), accounting for 56% of the total variance explained by the independent variable. The adjusted R^2 of .561 indicated that half of the variability in the use of shared OER is predicted by social influence of lecturers. To test the validity and the statistical significance of the overall regression model and to ascertain if the explained variance is not due to a random, an additional calculation was conducted using analysis of variance as presented in Table 4.22.

Table 4.22: Analysis of Variance (ANOVA): Testing for overall model fitness

Model		Sum of Squares	df	Mean Square	F	Sig.
3	Regression	8051.346	3	2683.782	144.835	.000d
	Residual	6189.009	334	18.530		
	Total	14240.355	337			

a. Dependent Variable: Acceptance to Share OER

d. Predictors: (Constant), Social Influence

Table 4.22: Analysis of Variance was run to examine the goodness of fit for the overall regression model on the impact of Social Influence (SI) on lecturers' use of shared OER. The result showed a statistically significant impact of Social Influence on lecturers' use of shared OER, F (3, 334) = 144.835, $p < .000$. This implies that the explained variance is not due to chance. Thus, hypothesis seven is not supported and it is confirmed that β_3 is different from zero.

Furthermore, examination of regression coefficient of the bivariate relationship between social influence and use of shared OER is presented at the end of step III of table 4.18 in terms of beta weights. Based on the beta weights, the regression coefficient is positively and significantly correlated with the criterion; use of shared OER ($\beta = 0.269$; $t = 4.331$; $p = 0.000$), indicating that social influence has a predictive capacity to stimulate lecturer's use of shared resources on OER repository. Simply put, the more university lecturers enjoy using resources freely available on OER repositories as shared by their colleagues, the greater the chance for more usage of OER.

Hypothesis eight: Facilitating Conditions (FC) would not influence lecturers' use of shared OER in the selected Universities of North-East Nigeria.

To test hypothesis eight, additional fourth predictor variable "facilitating conditions" was added to the model at the end of step IV to determine whether it would significantly predict university lecturer's use of shared OER. The model summary of the constructs was examined with coefficient of determination (R^2) as presented in the fourth row of table 4.20

which shows the strength of the bivariate relationship between facilitating conditions and lecturers' use of shared OER. The bivariate correlation showed a strong linear relationship between facilitating conditions of lecturers with use of shared OER; R = .763 and R^2 = .582, (adjusted R^2 = .577), accounting for 57% of the total variance explained by the independent variable. The adjusted R^2 of .577 indicated that two third of the variability in use of shared OER is predicted by facilitating conditions variable. To test the validity and the statistical significance of the overall regression model and to ascertain if the explained variance is not due to a random, analysis of variance was presented in Table 4.23.

Table 4.23: Analysis of Variance (ANOVA): Testing for overall model fitness

Model		Sum of Squares	df	Mean Square	F	Sig.
4	Regression	8282.935	4	2070.734	115.747	.000e
	Residual	5957.420	333	17.890		
	Total	14240.355	337			

a. Dependent Variable: Use of Shared OER

e. Predictors: (Constant), Facilitating Conditions

Table 4.23: Analysis of Variance was run to examine the statistical significance of the overall regression model on the influence of Facilitating Conditions (FC) on lecturers' use of shared OER. The result showed a statistically significant influence of facilitating conditions on lecturers' use of shared OER, F (4, 333) = 115.747, p < .000. This implies that the explained variance is not due to chance. Thus, hypothesis eight is not supported and it is confirmed that β_4 is different from zero.

Furthermore, regression coefficient of the bivariate relationship between facilitating conditions and use of shared OER is examined in terms of beta weights and is presented at

the end of step IV of table 4.18. Based on the beta weights, the regression coefficient is positively and significantly correlated with the criterion; use of shared OER (β = .200; *t* = 3.598; *p* = 0.000), indicating that facilitating conditions have a predictive capacity to stimulate lecturers to use the shared resources on OER repository. Simply put, as university lecturers access hardware, software, internet bandwidth, power supply, technology facilities and related equipment, the greater the chance for their overall use of shared OER.

4.7 Discussion of Findings on Acceptance to Share OER

The mixed method approach employed in this study allowed for an examination of both quantitative and qualitative findings related to research question one and research question 5a, focusing on the performance expectancy variable and its influence on lecturers' acceptance to share Open Educational Resources (OER) in the selected universities of North-East Nigeria.

The quantitative findings indicated a strong correlation between performance expectancy and acceptance to share OER among lecturers. The positive correlation, supported by the significant regression model, suggests that performance expectancy plays a significant role in predicting lecturers' willingness to share resources on the OER repository. This finding aligns highlights the influential role of performance expectancy as a determinant for lecturers' acceptance to share OER. Furthermore, the descriptive analysis, strength of the correlation, and statistical significance of the predictor variable consistently supported the notion of a positive linear relationship, indicating a promising future for OER acceptance in Nigeria. Engaging with OER activities not only increases lecturers' productivity in their job but also enhances their career progression opportunities. The beta weight of the regression coefficient suggests that the more lecturers recognize the value of OER in improving their performance, the greater the likelihood of acceptance and sharing resources on the repository. Considering the quantitative findings, it is important to explore how the

construct of performance expectancy influences lecturers' attitudes toward accepting and sharing OER in the selected universities of North-East Nigeria.

Complementing the quantitative findings, the qualitative approach revealed that lecturer attitudes toward sharing OER were influenced by several related themes. Lecturers' high expectations for increased academic skills through the creation of high-quality teaching and learning courseware, as well as the development of publishable resources, played a significant role in shaping their attitude towards sharing knowledge on the OER repository. This suggests that lecturers perceive an expectation for increased academic skills as a motivating factor for knowledge sharing, and the stronger the expectation, the more likely a positive attitude towards sharing will be sustained. Additionally, a recurring theme that emerged from the qualitative interviews was lecturers' belief about the inherent benefits of sharing itself. Administrators viewed knowledge sharing on OER as an opportunity for lecturers to enhance their digital presence, gain recognition institutionally from colleagues and students, and receive international recognition from professionals in their field.

The qualitative findings further highlighted the impact of digital challenges on lecturers' attitudes toward sharing knowledge on the repository, particularly for those lacking digital skills. This finding underscores the importance of addressing these challenges for successful engagement in knowledge sharing on the OER repository. Thus, lecturers need to address their digital skill deficiencies, familiarize themselves with the available open licenses for OER materials, and actively participate in the 5Rs activities (Reuse, Revise, Remix, Redistribute, Retain) to fully leverage the benefits of OER.

These findings align with existing literature, as Kandiero (2015) reported that Performance Expectancy, Effort Expectancy, and Social Influence positively influence educators' behavioral intention to adopt and use OER. Similarly, Padhi (2018) found that performance

expectancy and effort expectancy positively impacted intentions to use OER. Moreover, the findings support the results of Liebenberg *et al.*, (2018), who found high practical and significant relationships between Performance Expectancy, Facilitating Conditions, Effort Expectancy, and Behavioral Intention. Thus, combining the quantitative and qualitative findings, the mixed method approach provides a comprehensive understanding of how performance expectancy influences lecturers' attitudes and acceptance towards sharing OER in the selected universities of North-East Nigeria. These insights shed light on the motivations and beliefs underlying lecturers' willingness to engage in knowledge sharing activities on the OER repository.

The mixed method approach used in this study enabled an examination of both quantitative and qualitative findings related to research question two and research question 5b, focusing on the effort expectancy variable and its influence on lecturers' acceptance to share Open Educational Resources (OER) in the selected universities of North-East Nigeria.

The quantitative findings revealed a strong correlation between effort expectancy and acceptance to share OER among lecturers. The positive correlation, supported by the significant predictor analysis, indicates that effort expectancy plays a significant role in predicting lecturers' willingness to share resources on the OER repository. The predictive influence of the construct suggests that as university lecturers perceive sharing content via the OER repository as less cumbersome, it becomes more likely that their peers will also share resources on the repository. These findings reinforce the notion that, in addition to lecturers' expectations for increased job performance through OER engagement, the ease of sharing is a strong determinant of OER acceptance among university lecturers in North-East Nigeria. The question arises as to whether effort expectancy, being a strong

determinant of acceptance, also influences lecturers' attitude toward sharing knowledge on the repository.

Complementing the quantitative findings, the qualitative findings shed light on various themes influencing lecturers' attitudes toward sharing OER in relation to the effort expectancy construct. Factors such as the availability of free access to internet services within the university, responsive passwords and URLs for OER repository access, lecturers' skills in selecting relevant OER for mixing and reusing, and the user-friendly nature of the OER repository environment all contributed to shaping attitudes toward sharing. The qualitative interviews revealed additional underlying variables related to effort expectancy, including lecturers' personal, technical, and financial efforts that, if supported by the university administration, would influence attitudes toward knowledge sharing on the repository. These findings align with the results of Liebenberg *et al.*,, (2018), who found a significant practical relationship between effort expectancy and behavioral intention.

Considering the mixed method findings, it can be inferred that effort expectancy is not only a strong determinant of acceptance to share OER, but it also strongly influences lecturers' attitudes toward sharing knowledge on the OER repository. The quantitative and qualitative findings collectively support the notion that the ease and feasibility of sharing, as captured by effort expectancy, significantly impact lecturers' acceptance and attitudes toward OER sharing. These insights contribute to a deeper understanding of the complex factors influencing OER acceptance and provide valuable information for educators and policymakers seeking to promote knowledge sharing through OER in educational settings. The mixed method approach employed in this study allowed for the examination of both quantitative and qualitative findings related to research question three and research question

5c, focusing on the social influence variable and its impact on lecturers' acceptance to share Open Educational Resources (OER) in the selected universities of North-East Nigeria.

The quantitative findings revealed a strong correlation between social influence and acceptance to share OER among lecturers. The positive correlation, supported by the significant predictor analysis, indicates that social influence plays a significant role in predicting lecturers' willingness to share resources on the OER repository. The predictive capacity of the construct stems from the organizational structure of the universities, where departments and faculties are led by senior professionals who naturally foster a harmonious working relationship. This environment promotes mentorship and the sharing of knowledge and resources, which can influence younger lecturers to follow suit. Thus, social influence emerges as a strong determinant of lecturers' acceptance to share OER in North-East Nigeria. The question arises as to whether social influence, being a strong determinant of acceptance, also affects lecturers' attitudes toward sharing knowledge on the repository.

The qualitative findings for research question 5c validated the previous quantitative finding, affirming that faculty members visit the OER repository to explore the available resources, many of which are shared by their colleagues. Without explicit invitations from the OER community to register their resources, sharing becomes ingrained as a cultural practice within the university, and not doing so may be perceived as academic laziness. Additionally, lecturers are aware of the challenges students face in accessing relevant learning resources, which fosters an empathetic attitude toward sharing. This implies that social influence is deemed a strong determinant of acceptance to share OER, both quantitatively and qualitatively, among university lecturers in North-East Nigeria. However, despite the harmonious working relationship, the qualitative interviews revealed a socially inclined aspect not captured by the quantitative findings. It was found that a

notable number of lecturers share OER to impress their senior colleagues or the university administration, while a significant few refrains from sharing due to pre-existing political conflicts of interest with the departmental, faculty, or university leadership.

These findings are supported by previous research as Hayman (2018) reported that respondents were familiar with OER concepts and practices, and their attitude toward OER was positive. Similarly, Daud *et al.*, (2015) found that attitude, normative norm, and perceived behavioral control significantly influenced the knowledge-sharing behavior of academic staff. Panda and Santosh (2017) also indicated a positive inclination among faculty members toward sharing knowledge and learning resources, believing that these resources should be freely available to all. The findings further highlighted that a large percentage of faculty members recognized the importance of sharing knowledge and learning resources in research and teaching activities within the faculty.

The mixed method findings have therefore provided robust evidence that social influence is a significant determinant of lecturers' acceptance to share OER in North-East Nigeria. It not only influences acceptance but also affects attitudes toward sharing knowledge on the repository. The quantitative and qualitative findings collectively contribute to a deeper understanding of the complex factors influencing OER acceptance and shed light on the social dynamics within the academic environment. These insights have implications for promoting a culture of knowledge sharing and the effective implementation of OER in educational institutions.

The mixed method approach employed in this study allowed for the examination of both quantitative and qualitative findings related to research question four and research question 5d, focusing on the facilitating condition variable and its impact on lecturers' acceptance to share Open Educational Resources (OER) in the selected universities of North-East Nigeria.

The quantitative findings revealed a strong correlation between facilitating condition and acceptance to share OER among lecturers. The positive correlation, supported by the significant predictor analysis, indicates that facilitating condition plays a significant role in predicting lecturers' willingness to share resources on the OER repository. The predictive capacity of the construct is rooted in the satisfaction of lecturers with the technical infrastructure provided by the universities, including the university repository, internet services, reward system, and institutional policies supporting OER activities. While a few lecturers expressed concerns about the university's power supply shortage and the availability of OER administrators and technical assistants as potential barriers to OER uptake, the majority stated that the technical infrastructure provided by the universities is sufficient to facilitate acceptance of OER. Thus, facilitating condition emerges as a strong determinant of lecturers' acceptance to share OER in North-East Nigeria. However, the question arises as to whether facilitating condition, being a strong determinant of acceptance, also influences lecturers' attitudes toward knowledge sharing on the repository.

The qualitative findings for research question 5d supported the quantitative finding, providing additional insights from the interviewed participants. Some lecturers highlighted challenges related to accessing computers and internet connectivity, particularly for those who rely on laptops. These challenges were mentioned earlier in the demographic section of the analysis, which revealed that laptops were the most frequently used devices for accessing OER among university lecturers. The cumbersome nature of using laptops on the go, limited battery life, and the high engagement of senior colleagues with administrative routines were cited as factors contributing to infrequent visits to the OER repository.

These barriers, such as device ownership, internet access, and time constraints, were mostly attributed to personal circumstances rather than the failure of the university to provide

infrastructure for OER uptake. The interviewed participants emphasized that facilitating condition encompasses two aspects: the university's commitment to providing and maintaining technical infrastructure, enacting and enforcing policies, and implementing a functional reward system, and lecturers' personal determination to own mobile devices such as tablets and smartphones, allocate time for OER development and sharing, and seek alternative power sources and internet subscriptions. As these barriers are addressed by both the university administration and individual lecturers, facilitating condition becomes a determinant of their attitude toward knowledge sharing on the repository.

These findings are supported by previous research. Yogesh *et al.*, (2017) found that attitude played a central role in behavioral intentions and usage behaviors related to OER, partially mediating the effects of other constructs on behavioral intentions. Though, the finding was not supported by Ozdemir and Bonk (2017) whose study revealed that the time required for searching, selecting, editing, and applying OER was a significant challenge to OER adoption and utilization among university lecturers. Hayman (2018) reported that respondents were familiar with OER concepts and practices and had a positive attitude toward OER as part of their course selection routines. However, Percy and Belle (2016) found that facilitating conditions did not have a statistically significant impact on users' intention to adopt OER.

Consequently, the mixed method findings provide robust evidence that facilitating condition is a significant determinant of lecturers' acceptance to share OER in North-East Nigeria. It not only influences acceptance but also affects attitudes toward knowledge sharing on the repository. The quantitative and qualitative results together contribute to a comprehensive understanding of the multifaceted factors influencing OER acceptance, shedding light on the role of technical infrastructure, university policies, and personal

determinants. These insights have implications for enhancing facilitating conditions and promoting a favorable environment for OER uptake.

4.8 Discussion of Findings on Use of Shared OER

The mixed method approach utilized in this study allowed for an examination of both quantitative and qualitative findings pertaining to research question six, which focused on the influence of the performance expectancy variable on lecturers' use of Open Educational Resources (OER) in the selected universities of North-East Nigeria.

The quantitative findings revealed a strong positive correlation between performance expectancy and lecturers' utilization of shared OER. The analysis of the corresponding null hypothesis confirmed this significant linear correlation, indicating that performance expectancy serves as a predictor for lecturers' OER utilization. Consequently, as lecturers continue to develop and share resources on the OER repository, they stand to benefit from improved performance both personally and professionally. This stems from the understanding that skill development is honed through practice, while knowledge is enriched through sharing. Failure to engage in these activities can have the opposite effect.

In the process of utilizing OER, lecturers engage in activities such as downloading shared resources, reusing them as they are or with modifications, remixing them with other OERs, revising entire documents to suit their needs, retaining them as their own, and redistributing them to others as part of their teaching materials. This process compels lecturers to acquire additional computer and internet skills, research skills, and analytical thinking, leading to successful development and deployment of OER, with the anticipation of career advancement. Given the quantitative finding's status as a determinant for lecturers' use of shared OER, it is important to examine how this construct influences their attitudes toward the use of shared OER in the selected universities of North-East Nigeria.

The qualitative findings for research question ten (10a) substantiated the quantitative finding from research question six, shedding light on the benefits that lecturers derive from the open permissions associated with using and reusing OER while developing new resources. The engagement with open content, made possible by these permissions, provides lecturers with a competitive advantage over the use of copyrighted materials, resulting in performance enhancement, career progression, skill development, and time savings in developing new OER. These underlying qualitative findings collectively shape lecturers' attitudes toward using shared OER, thereby reinforcing the earlier quantitative finding that the construct of "performance expectancy" significantly predicts lecturers' use of shared OER. The administrators interviewed also supported these assertions, sharing their personal and professional growth experiences, as well as their ability to extend their impact through the department, faculty, campus, and even nationally and internationally, in the absence of OER. With the recent introduction of OER, they did not perceive its use by lecturers negatively. Instead, they viewed it as a potential tool for career awareness and advancement in their practice.

These findings align with previous research. Kandiero (2015) found that performance expectancy, effort expectancy, and social influence have a statistically significant positive influence on educators' behavioral intention to adopt and use OER. Similarly, Percy and Belle (2016) reported that performance expectancy and effort expectancy positively affect a user's behavioral intention to use OER, with the latter exerting a strong influence on the actual use of OER. Hayman (2018) also supported these findings, revealing that participants expressed a willingness to consider using OER related to their discipline. However, Wolfenden *et al.,* (2017) found that teacher educators' understanding and use of OER varied greatly, with limited traction at the department or institutional level.

The mixed method findings provide robust evidence that performance expectancy strongly influences lecturers' use of OER in North-East Nigeria. The quantitative and qualitative findings together offer a comprehensive understanding of the factors shaping lecturers' utilization and attitudes toward OER, highlighting the significance of performance expectancy. These insights have implications for promoting OER adoption.

The mixed method analysis conducted in this study examined both quantitative and qualitative findings related to research question seven, which focused on the influence of effort expectancy on lecturers' use of Open Educational Resources (OER) in the selected universities of North-East Nigeria.

Quantitative findings revealed a strong positive correlation between effort expectancy and lecturers' utilization of shared OER. The analysis of the corresponding null hypothesis confirmed this significant linear correlation, suggesting that effort expectancy serves as a predictor for lecturers' OER utilization. The construct of effort expectancy was found to be a strong determinant for lecturers' use of OER available in the university's repository. This is attributed to the fact that the factors driving lecturers' embrace of OER do not require significant effort to implement. For example, the exposure to and development of quality digital lecture materials, routine use of information and communication technologies (ICTs), and the availability of OER for access, sharing, and reuse within the university community all involve minimal effort. However, the level of effort expended in using OER by university lecturers varies depending on their rank and the devices they use for accessing the resources. Demographic data revealed that younger lecturers who use smartphones and tablets, access the internet and OER repository daily and weekly, exert less effort and derive significant enjoyment from the process. The qualitative findings supported this perspective

and provided further insights into how the effort expectancy construct influences lecturers' attitudes toward using shared OER.

Qualitative findings related to research question ten (10b) highlighted that the interface of the OER repository requires minimal effort to navigate, upload, and download resources for use. However, participants in the interviews expressed concerns about access to alternative power sources, the time required to visit the repository, and the strength of the university's internet. These concerns align with the quantitative finding, which exposed the challenges faced by older lecturers who use desktops and laptops, access the internet and OER repository on a monthly or occasional basis. These lecturers rely on the university's power supply to operate their devices and depend on the university's internet services, which often have weak signals for internet access. Additionally, they are occupied with routine administrative tasks throughout most of their time. Addressing these concerns requires a significant amount of effort and is not a concern for younger lecturers who effortlessly access the internet using high-frequency smartphones equipped with abundant data.

These findings are consistent with previous studies that have investigated the role of effort expectancy as a determinant of OER use and attitude toward use. Panda and Santosh (2017) found a significantly positive inclination among faculty members toward sharing knowledge and learning resources. Similarly, the study by Skaik and Othman (2017) reported that attitude is significantly and positively influenced by trust and reputation as motivators of knowledge-sharing behavior. Jurado and Pettersson's (2018) findings indicated that lecturers generally hold a positive attitude toward OER across all groups, although the group in Guatemala showed some reluctance to share their materials.

Furthermore, lecturers utilized OER for sharing their content and expressed a willingness to make their own materials available to others.

Inferences drawn from these findings showed that the mixed method findings highlight the influence of effort expectancy on lecturers' use of OER in the selected universities of North-East Nigeria. Thus, the quantitative and qualitative findings provide valuable insights into the factors shaping lecturers' utilization and attitudes toward OER, emphasizing the significance of effort expectancy. These findings have implications for promoting OER adoption and addressing the challenges faced by different groups of lecturers in accessing and using OER resources effectively.

The mixed method analysis conducted in this study examined both quantitative and qualitative findings related to research question eight, which explored the impact of social influence on lecturers' use of Open Educational Resources (OER) in the selected universities of North-East Nigeria.

Quantitative findings revealed a strong linear relationship between social influence and lecturers' utilization of shared OER. The analysis of the corresponding null hypothesis confirmed this significant relationship, suggesting that social influence serves as a predictor for mass utilization of shared OER in the region. The construct of social influence emerged as a strong determinant for lecturers' use of OER available in the university's repository. This is due to the dependent relationship that exists among lecturers, particularly in the context of mentoring. In this relationship, a senior colleague is paired with a junior colleague to team-teach a course, creating a social influence on the mentee's overall knowledge and disposition. Course material development is often shared between the

mentor and mentee, with the mentee drafting and the mentor reviewing the materials to ensure adherence to the university's quality standards. The qualitative findings supported and expanded upon these quantitative findings, identifying the structural strata within the university system that favor the influence of social factors in shaping lecturers' attitudes toward using shared OER.

Qualitative findings related to research question ten (10c) revealed that social influence is a significant determinant of lecturers' attitudes toward using shared OER. The interviews with administrative colleagues highlighted the existence of departmental and faculty strata within the university, where colleagues work together to promote knowledge through teaching and research. These strata foster compliance with the university's OER policy directive, as non-compliance could undermine promotion prospects or the reputation of not assisting students. At the university level, compliance with the OER policy is influenced by the activities of departments and faculties, which, in turn, enhance students' access to learning resources, contribute to global university rankings, and raise Nigeria's visibility on the global OER Map. These interdependencies create a socially inclined silent competition among departments, faculties, and universities, collectively influencing lecturers' attitudes toward using OER. However, the qualitative data also revealed a hidden socially inclined aspect not captured by the quantitative findings. It showed that a significant number of lecturers use OER to impress their senior colleagues or the university administration, while a few refrains from using shared OER due to pre-existing political clashes of interest with departmental, faculty, or university leadership.

These findings align with previous studies that have examined the role of social influence as a determinant of OER use and attitude. Kandiero (2015) found that performance expectancy, effort expectancy, and social influence significantly and positively influence

educators' behavioral intention to adopt and use OER. Ozdemir and Bonk (2017) also reported that teacher perceptions of the benefits of OER in improving student performance were highly positive, although the time required for searching, selecting, editing, and applying OER was identified as a major challenge. However, these findings are not supported by Padhi (2018), whose results indicated that social influence and facilitating conditions do not have a positive effect on the intention to use OER.

Inferences drawn from these findings showed that the mixed method findings emphasize the impact of social influence on lecturers' use of OER in the selected universities of North-East Nigeria. Similarly, the quantitative and qualitative findings shed light on the social factors shaping lecturers' utilization and attitudes toward OER, with social influence emerging as a significant determinant. These findings have implications for promoting OER adoption by leveraging social influence within the university system and addressing political clashes of interest that may hinder OER utilization.

The mixed method analysis conducted in this study investigated the influence of facilitating conditions on lecturers' use of Open Educational Resources (OER) in the selected universities of North-East Nigeria. Both quantitative and qualitative findings were examined to provide a comprehensive understanding of this relationship.

Quantitative findings revealed a strong linear relationship between facilitating conditions and lecturers' utilization of shared OER. The analysis of the corresponding null hypothesis supported this finding, indicating that facilitating conditions predict lecturers' embrace of OER utilization in their teaching and research activities. However, it is important to note that the contextual and institutional factors play a significant role in OER utilization. Lecturers' satisfaction with the technical infrastructure, including the university repository, internet services, reward system, and institutional policies, influences their adoption of

OER. Variations exist in the supply of electricity, provisions of internet facilities and OER repositories, availability of OER administrators, technical assistants, and support services across universities. Additionally, the provision and maintenance of these facilities vary considerably based on location, internet coverage, and the availability of skilled manpower. Therefore, facilitating conditions emerge as a strong determinant for lecturers' use of shared OER in North-East Nigeria. Furthermore, an interesting question arises from these findings: if facilitating conditions strongly determine lecturers' use of shared OER, can they also determine their attitude toward knowledge sharing on the repository?

Qualitative findings, which focused on research question ten (10d), provided additional insights that supported the quantitative findings. Senior administrators emphasized that lecturers' skills in using computers and the internet, coupled with the availability of the OER repository, shape their attitudes toward OER utilization. The existence of an OER policy and the provision of ICT personnel as technical assistants to troubleshoot issues further stimulate a positive attitude toward using OER. Interview data indicated that lecturers appreciate the legal openness of OER, which allows them to access, build upon, and share data with colleagues and students without legal restrictions. However, participants expressed concerns that the lack of incentives for lecturers to cover data subscription costs, renew antivirus software licenses, fuel standby generators, and make OER use a requirement for promotion might negatively affect their attitudes toward using OER. While this opinion was not universal among the interviewed participants, it carries weight in predicting lecturers' intentions to use OER, indicating that these facilitating conditions have an impact.

The findings of this study align with previous research. Hilton (2016) identified factors that affect the acceptance of OER in Africa, including culture issues, pedagogical localization,

incentives for faculty members, user behaviors, and user support systems. Hatakka (2016) found a lack of infrastructure for proper implementation of OER in developing countries. Similarly, De-Oliveira *et al.,* (2017) revealed that instructors' minimum access to information and communication technology infrastructure, such as hardware and internet connectivity, enable OER engagement but do not necessarily act as motivating factors. The findings also agree with Yogesh *et al.,* (2017), who showed that attitude plays a central role in behavioral intentions and usage behaviors, partially mediating the effects of exogenous constructs on behavioral intentions and directly influencing acceptance and usage behaviors.

Inferences drawn from this mixed method analysis provided comprehensive insights into the influence of facilitating conditions on lecturers' use of OER in the selected universities of North-East Nigeria. Both quantitative and qualitative findings emphasized the importance of contextual and institutional factors in determining OER utilization. Facilitating conditions, including technical infrastructure, policies, and support services, emerged as significant determinants. These findings highlight the need to address these conditions to promote the adoption and positive attitudes toward OER among lecturers.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

The study investigated the determinants of lecturers' acceptance, use and attitude toward Open Educational Resources for knowledge sharing in Universities of North-East Nigeria. This chapter presents summary of the study findings, conclusions, recommendations, contribution of the study to the existing body of knowledge, limitations of the study and suggestions for further research.

5.1 Conclusions

Based on the findings of this research, it was concluded that;

The research conducted revealed several important findings regarding the state of academic manpower and the acceptance of OER in North-East universities. One significant conclusion drawn from the data was that more than half of the lecturers held Senior and lower ranks, indicating an imbalance in academic manpower. This was further supported by the fact that many lecturers had only 11-20 years of work experience or less, which suggests a younger population of lecturers in these universities.

Regarding the familiarity of lecturers with OER, it was found that most of them had only been using it for 1-3 years or less. This indicates that the acceptance of OER is still in its early stages and has not been fully embraced by the academic community in these universities. Furthermore, the research found that the primary device used for accessing OER was the laptop computer, which was used by the majority of academics. However, the preponderance of using laptop computers resulted in several challenges in accessing the OER repository. These included issues such as the size of the device, battery depletion, and inconvenience.

As a result, lecturers accessed the OER repository only weekly, with daily and monthly access being the least frequent. This suggests that the type of device used by lecturers affects their frequency of accessing the repository. Generally, these findings provided valuable insights into the determinants of lecturers' acceptance, use, and attitude towards OER in North-East universities. By understanding these factors, it may be possible to develop strategies to encourage greater acceptance of OER and to address the challenges that currently hinder its use.

First, it was concluded that performance expectancy influenced lecturers' acceptance to share OER with more of their expectations concentrated on getting improved academic writing skills by engaging with OER. Additionally, lecturers' performance expectations as a determiner for OER acceptance stands to reposition North-East universities with more OER engagement over other regions in Nigeria. This was invigorated by the existence of a strong linear correlation between performance expectancy of lecturers with acceptance to share OER and the relationship being positive and significantly correlated with the criterion; acceptance to share OER. It was further concluded that if OER is to be explored as a key instrument for addressing teaching and learning resource gaps, performance expectancy variable with a predictive capacity to stimulate lecturer's acceptance to share their resources on OER repository should be explored further. Conclusions arising from the attitude variable validated these facts with additional superior evidence that lecturers have high expectation for an increased academic skill, expectation for professional growth, exposure to digital challenges and opportunity to use OER repository for knowledge sharing. These collectively influenced their attitude to share knowledge on OER repository.

Second, it was concluded that effort expectancy has influence on lecturers' acceptance to share OER as they dissipate less effort in accessing the university OER repository due to

its compatibility with all devices; laptops, tablets, smart phones and iphones. Moreover, the variable was a strong determiner with linear relationship with acceptance to share OER and the relationship was positive and significantly correlated with the criterion; acceptance to share OER. It was further concluded that effort expectancy variable has a predictive capacity to stimulate lecturer's acceptance to share their resources on OER repository. Principally, the less effort lecturers invested in accessing OER repository, the more frequent they engage with knowledge sharing activities. This was validated by the fact that these lecturers are enthusiastic to share resources on OER repositories as it requires less effort to navigate. Nevertheless, access to alternative sources of power, the time to customize OER to meet the needs of lecturers' course requirement and the poor nature of the university internet signals have a negative consequence on lecturers' attitude toward knowledge sharing activities.

Third, it was concluded that social influence variable has the least impact (among the determinants) on lecturers' acceptance to share resources as OER. Though, the social inclination that exist between junior and senior academics has caused lecturers to maintain some level of OER patronage. In spite of its least impact, a strong linear relationship exists with acceptance to share OER and the relationship was positively and significantly correlated with the criterion; acceptance to share OER. More importantly, the social influence variable has a predictive capacity to stimulate lecturer's acceptance to share their resources on OER repository. Basically, the more university lecturers are influenced by the activities of their colleagues on OER repositories, the greater the chance for acceptance to share. These conclusions were verified by the attitude variable pointing to the fact that, overall expectation of lecturers' colleagues from various faculties and departments and the social expectations from students conjointly influenced their attitude toward knowledge sharing activities on OER repository.

Fourth, facilitating conditions denoting availability of ICT centre and internet connectivity, coupled with possession of computer and the internet skills necessary to develop and upload OER, influence lecturers' acceptance to share resources on the repository. These conditions inspired knowledge sharing culture among academics as they bridged the gap between knowledge and the media through which its dissemination is possible. Despite the facilitating conditions variable being a determiner for OER acceptance, it also has a strong linear relationship with acceptance to share OER and the relationship was positive but not significantly correlated with the criterion; acceptance to share OER. Therefore, facilitating conditions variable does not have a predictive capacity to stimulate lecturer's acceptance to share their resources on OER repository. This point to the fact that if nothing is done regarding the university ICT infrastructure; steady power supply, strong, free and accessible internet bandwidth, devices and OER support services, OER acceptance by lecturers would be slow. Coincidentally, most lecturers routinely used computer and internet, the universities in the region developed OER repositories, technical assistants are provided to trouble shoot issues emanating from OER use and institutional OER policies are provided to guide usage. However, these provisions are yet to influence lecturers' attitude toward knowledge sharing activities on OER repository thus, pointing to absence of financial support either as incentives or as assistance to subscribe for data in the event that university internet services cut off during upload or download process.

Fifth, it was concluded that performance expectancy variable influenced lecturers' use of OER in the selected Universities of North-East Nigeria. The influence was apparent as lecturers sustained high expectation for an increased job performance, career progression, skill development and intellectual relief from developing new resources for teaching. These expectations jointly influenced their attitude towards knowledge sharing activities on OER

repository and that was achieved with little effort. Thus, performance expectancy variable is a determiner of lecturers use of shared OER in North-East Universities with a strong linear correlation with use of shared OER. The relationship was positively and significantly correlated with the criterion; use of shared OER concluding that the variable has a predictive capacity to stimulate lecturers to use the shared resources on OER repository.

Sixth, effort expectancy has influence on lecturers' use of OER in the selected Universities of North-East Nigeria with simplicity of the repository interface rated the highest and their attitude toward using OER was positive. Major reservations that overburden lecturers' effort in using OER was the power outages, time to revise and remix OER and the poor strength of internet signals. Despite these reservations, the variable has a strong linear relationship with use of shared OER and the relationship was positively and significantly correlated with the criterion; use of shared OER. Similarly, the variable has a predictive capacity to stimulate lecturer's use of shared resources on OER repository.

Seventh, social influence has impact on lecturers' use of OER in the selected Universities of North-East Nigeria. Conclusions relating to this variable showed that a variety of social influence factors inspired lecturers to develop a positive attitude toward using the shared OER for their course development and personal research. In the same way, social interaction with colleagues about sharing and the presence of resources shared by co-lectures on the repository has a promising future for OER utilization. Additionally, the observed relationships were rated to be of strong linear relationship with use of shared OER and the relationship was positively and significantly correlated with the criterion; use of shared OER. This concludes the fact that, the more university lecturers relish using resources freely available on OER repositories as shared by their colleagues, the greater the chances for more OER usage. Therefore, the variable has a predictive capacity to stimulate lecturer's use of shared resources on OER repository.

Eighth, facilitating conditions has influence on lecturers' use of OER in the selected Universities of North-East Nigeria. Facilitating conditions were rated next to the preceding variables, bearing in mind that downloading and using the shared OER was easy and enable lecturers to accomplish course development activities more rapidly. While the challenges regarding device access, availability and speed of internet bandwidth and electricity outage still exist which hinder OER utilization in the selected Universities of North-East Nigeria. In spite of these challenges, the variable has a strong linear relationship with use of shared OER and the relationship was positively and significantly correlated with the criterion; use of shared OER concluding that, facilitating conditions have a predictive capacity to stimulate lecturers to use the shared resources on OER repository. Regarding attitude toward usage of OER; it was concluded that using OER have the capacity to increase lecturers' productivity in the university.

5.2 Recommendations

1. The recognition of the significant value of OER by university lecturers in North-East Nigeria presents an opportunity for the Management of Universities to sustain OER activities. To achieve this, the university should adjust its OER policy to support the career progression of lecturers including those in National Open Universities of Nigeria (NOUN). This could include provisions for promotion through courseware and book development, inventions of scientific resources, Institution-Based Research (IBR) grants, and completion of community service projects. By doing so, the university can encourage lecturers to continue to engage with OER and reap the personal and professional benefits it provides.
2. Considering the concerns raised by university lecturers regarding the technical skills required to navigate the OER repository, the university administration should arrange for an OER workshop to educate them on its flexibility. The workshop

would enable the lecturers to understand different aspects of the repository interface and guide them on how to upload and download resources regardless of their computer literacy and background. Additionally, internet access should be available and free within the university premises at all times, and the repository URL and passwords should be operational to ease the process of accessing the site.

3. Given the significance of the social influence factor in determining acceptance to share Open Educational Resources (OER), it is crucial for the university administration, in collaboration with the Deans and department heads, to reinforce the existing culture of mentorship within the institution. This measure is vital for the success of OER projects as they rely on collaboration and teamwork, which are essential for the 5Rs of retaining, reusing, revising, remixing, and redistributing OER resources. Effective implementation of this approach requires senior colleagues to guide and lead junior lecturers towards achieving the desired objectives. Maintaining a harmonious working relationship among all stakeholders is also critical.

4. Although the university has established an OER repository, provided internet services, and developed institutional policies, the shortage of power supply remains a challenge that needs a permanent solution. To promote the acceptance of OER, the university management should prioritize training of additional OER administrators, provide technical assistance and support services. Addressing the problem of device ownership is also crucial, and the university should assist lecturers with access to digital devices on either a lease or loan basis. Furthermore, lecturers should allocate sufficient time for OER-related activities and demonstrate a high level of commitment towards their success.

5. To promote knowledge sharing on the University OER repository, the positive constructs identified in the study regarding lecturers' attitudes should be leveraged by the University management. This can be achieved by cultivating a culture of knowledge sharing among faculties and addressing any concerns raised by lecturers as identified in the study findings. By doing so, the University can encourage a positive attitude towards knowledge sharing, sustain the current disposition of lecturers towards sharing knowledge on the OER repository, and gradually establish a culture of knowledge sharing on the platform.
6. Given the advantages that university lecturers have gained from open permissions to use and reuse OER, such as improved performance, career advancement, skill development, and time savings in creating new resources, it is incumbent upon them to promote OER activities. This will enhance access to top-notch teaching and learning resources and benefit a wider audience.
7. University management should provide assistance to lecturers who heavily rely on university resources such as power and internet services, and are constantly occupied with routine administrative tasks, by providing them with high-frequency smartphones and tablet computers. This will facilitate their uptake of OER and enable them to access educational materials more conveniently.
8. To avoid submissiveness towards senior colleagues who may only reward the use of OER, the university management should institutionalize OER activities. Lecturers should also view OER as a blessing of the 21st century.
9. Although internet facilities and ICT infrastructure are available, the university administration must incentivize lecturers to cater for data subscriptions, renew antivirus software licenses, fuel standby generators and promote OER use as a

requirement for promotion. These are additional facilitating conditions for OER use in North-East universities.

10. To strengthen lecturers' positive attitude towards using the shared OER, the university management should develop a functional reward system. Lecturers should be trained to understand the provisions of Creative Commons license and the 5Rs (Retain, Reuse, Revise, Remix, and Redistribute) model. This will clarify some of the rights that can be incorporated with OER development and use, ensuring continuity in the development of OER resources.

5.3 Contributions to Body of Knowledge

The study made several contributions to the existing body of knowledge as follows;

1. The study utilized an embedded mixed method design, which is a unique approach in the field of educational research with a focus on OER. By using the UTAUT framework as a theoretical lens, the study provided a comprehensive understanding of the experiences of university lecturers in developing educational resources and the trend of resource sharing among academics and students in North-East Nigeria. The acceptance of this approach is considered an emergent design in the region.
2. The study expanded the original UTAUT framework by separating the dependent variables into "acceptance" and "use" of OER instead of the traditional behavioral intention and actual use. This modification adds value to the UTAUT framework by providing an opportunity for future researchers to theorize the two new dependent variables.
3. The qualitative findings of the study further expounded on the multidimensional constructs of UTAUT, revealing a new variable that was missing in the framework. The study generated 17 themes for acceptance to share OER and 16 themes for use

of shared OER, which collectively supported lecturers' attitude towards sharing and using OER.

4. Additionally, the qualitative cross-case analyses provided support for the quantitative results, confirming a multivariate relationship between the independent and dependent variables. The study also shed light on the nature of this relationship (i.e., complementarity, development, and expansion) and provided information about participants' responses, clarifying the multivariate relationship with the help of qualitative data.

5.4 Limitations of the Study

The study had several limitations, which are outlined below:

1. The study involved traveling to various universities located in areas affected by insurgencies over the years, which posed a risk to the safety of the researchers. Consequently, the number of trips was limited, which affected the timely compilation of results.
2. The itinerant nature of lecturers also presented a challenge as many of them forgot where they kept their questionnaires, leading to rescheduling of interviews.
3. Another limitation was the difficulty in reaching designated respondents such as Deans, Heads of Department, and Directors due to their busy schedules. In some cases, the researchers had to conduct interviews with representatives, which could have affected the study's reliability.
4. The study's reliance on the Atlas ti software for qualitative data analysis also posed a limitation, as the trial version had limited features.
5. The research's generalizability to other contexts such as universities in the north central and north-west regions of the country was also limited. Each university has

its culture, and the level of OER awareness and usage depth varies considerably, which could affect the findings' applicability in other settings.

5.5 Suggestions for Further Studies

Based on the limitations identified in the study, there are several suggestions for further research to be explored:

1. In order to address the safety concerns associated with traveling to universities located in areas affected by insurgencies, future studies could explore alternative data collection methods, such as online surveys, telephone interviews, or virtual focus group discussions.
2. To avoid the issue of itinerant lecturers forgetting where they kept their questionnaires, researchers could consider using digital questionnaires that can be accessed online or via mobile devices.
3. To overcome the challenge of reaching designated respondents, researchers could consider using a snowball sampling technique to identify other potential participants who may have relevant experiences and perspectives to share.
4. Future studies could consider using more advanced and robust qualitative data analysis software to avoid the limitations associated with trial versions of software like Atlas ti.
5. To improve the generalizability of the study's findings, future research could adopt a multi-site research design that involves sampling from a variety of universities across different regions of the country. This would allow for a more comprehensive understanding of the factors that influence OER acceptance and use across a wider range of contexts.

REFERENCES

Adamu, A. U. (2017, July 26). NOUN: Student population hits 400,000. National open university of Nigeria Blueprint. Doi: https://www.blueprint.ng/noun-students-population-hits-400000/

Ajzen, L., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior, Prentice-Hall, Englewood Cliffs, London: Routledge press.

Annand, D., & Jensen, T. (2017). Incentivizing the production and use of open educational resources in higher education institutions. *International Review of Research in Open and Distributed Learning,* 18(4), 1–15. Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/3009/4226

Attuquayefio, S. N., & Addo, H. (2014). Using the UTAUT model to analyse students' ICT adoption. *International Journal of Education and Development using Information and Communication Technology,* 10 (3), 75-86.

Bliss, T. J., & Smith, M. (2017). A brief history of open educational resources. In R. S.

Jhangiani and R. Biswas-Diener (Eds.), *Open: The philosophy and practices that are revolutionizing education and science* (pp. 9–27). London: Ubiquity Press. Retrieved from; https://doi.org/10.5334/bbc.b

Butcher, N. (2011). *A Basic guide to open educational resource.* Commonwealth of Learning: Vancouver, Ubiquity Press.

Bunmi, B., & Olatunji, E. (2022, October 17). Nigeria not among 10 most innovative sub-Saharan African economies. *Business Day Nigeria*. P2. https://businessday.ng

Cardoso, S., Rosa, M. J., & Stensaker, B. (2016). Why is quality in higher education not achieved? The view of academics. *Assessment and evaluation in higher education*, 41 (6), 950 – 965. doi.org/10.1080/02602938.2015.1052775.

Chen, C. C. (2017). Factors affecting high school teachers' knowledge-sharing behaviors. *Social Behaviour and Personality: An International Journal*, 39(7), 993-1008.

Christopher, N. L., & Julie, A. L. (2018). Evaluating the effectiveness of adopting open educational resources in an introductory American government course. *Journal of Political Science Education*, 14(4), 555-566.

Cox, G., & Trotter, H. (2017). Factors shaping lecturers' adoption of OER at three South African universities. In C. Hodgkinson-Williams and P. B. Arinto (Eds.) *Adoption and impact of OER in the Global South* (pp. 287–347). Retrieved from https://doi.org/10.5281/zenodo.601935

Creative Commons, (2016). *What is OER?* Retrieved from: https://wiki.creativecommons.org/wiki/What_is_OER%3F

Creswell, J. W. (2009). *Research design: qualitative, quantitative, and mixed method approaches* (Third Edition). Sage Publications, New Delhi, India.

Creswell, J. W., & Creswell, J. D. (2018). Research design: qualitative, quantitative, and mixed method approaches (Fifth Edition). Sage Publications, New Delhi, India.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika Journal,* 16 (3), 297–334. doi:10.1007/bf02310555.

Daud, N., Abdul-Wahab, R., & Nordin, N. A. (2015). Knowledge sharing behaviour among academic staff at a public higher education institution in Malaysia: How willing are they? *International Journal of Applied Behavioural Research in Education* 13, (7). 5277-5287.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *Quarterly Journal of Management Information System Research Centre,* 13(3), 319-340. https://doi.org/10.2307/249008

De-Oliveira, N. J. D., Pete, J., Daryono, I., & Cartmill, T. (2017). OER use in the global south: A baseline survey of higher education instructors. In C. Hodgkinson-Williams and P. B. Arinto (Eds.), *Adoption and impact of OER in the Global South* (pp. 69–118). Retrieved from https://doi.org/10.5281/zenodo.599535

Emarge, Ed. Consultants, (2017). Impact of OER at Antigua State College, Burnaby: Commonwealth of Learning, Retrieved from http://oasis.col.org/handle/11599/2750

FGN, (2017). *Nigerian Culture and Heritage*. Retrieved from http://www.nigeria.gov.ng/index.php/2016-04-06-08-38-30/nigerian-culture

FME, (2022). *Education for change: A ministerial strategic plan 2018–2020*. Abuja, Nigeria: Ministry of Education.

Green, C. (2017). Open licensing and open education licensing policy. In R. S. Jhangiani and R. Biswas-Diener (Eds.), *Open: The philosophy and practices that are revolutionizing education and science* (pp. 29–41). London, UK: Ubiquity Press.

Hartnett, J. (2017). Open pedagogy: Freely sharing teaching resources in psychology. In R. S. Jhangiani and R. Biswas-Diener (Eds.), *Open: The philosophy and practices that are revolutionizing education and science* (pp. 245–254). London, UK: Ubiquity Press.

Hatakka, M. (2016). Build it and they will come? Inhibiting factors for reuse of open content in developing countries. *The Electronic Journal of Information Systems in Developing Countries,* 37(5), 1-16.

Hayman, J. (2018). Awareness and use of open educational resources (OER) in Ontario: A preliminary study of post-secondary educator perspectives. Research report by ECampusOntario September, 2018, 1-28 Retrieved from https://www.ecampusontario.ca/wp-content/uploads/2018/09/eCO-Strategic-Plan.

Hilton, J. (2016). Open educational resources and college textbook choices: a review of research on efficacy and perceptions. *Educational Technology Research and Development,* 64 (4), 573–590.

Hodgkinson-Williams, C., & Arinto, P. B. (2017). *Adoption and impact of OER in the Global South*. Cape Town and Ottawa: African minds, international development research centre and research on open educational resources. DOI: 10.5281/zenodo.1005330

Igwe, K. N. (2020). *Exploring the literature on utilization of open educational resources in Nigeria: Current context, potential determinants, and future pathways.* Akanu Ibiam Federal Polytechnic, Unwana, Nigeria. DOI: 10.4018/978-1-7998-3559-2.ch002

Johnson, R. B., & Christensen, L. (2014). (5th Ed.) *Educational research: Quantitative, qualitative, and mixed approaches* SAGE Publications, Inc.

Jhangiani, R. S., Pitt, R., Hendricks, C., Key, J., & Lalonde, C. (2016). Exploring faculty use of open educational resources at British Columbia post-secondary institutions. BCcampus Research Report. Victoria, BC: BCcampus.

JISC, (2005). Joint information system committee committee final report project. Loughborough, Leicestershire, United Kingdom.

Jung, E., Bauer, C., & Heaps, A. (2017). Higher education faculty perceptions of open textbook adoption. *The International Review of Research in Open and Distributed Learning*, 18(4), 38-52.

Jurado, R. G., & Pettersson, T. (2018). Attitudes and utilization of open educational resources. *The Journal of Open and Distance Learning.* 24(1): p. 3-10.

Kandiero, A. (2015) Study educators' challenges and behavioural intention to adopt open educational resources: The case of Africa University, Zimbabwe. Masters' Thesis: University of Cape Town www.studentpirgs.org

Kanwar, A., & Mishra, S. (2017). From policy to practice: lessons from the commonwealth. A paper presented at the international forum on ICT and education 2030 Qingdao, China. Commonwealth of Learning (COL) Publisher.

Kelly, H. (2014). A path analysis of educator perceptions of open educational resources using technology acceptance model. *The International Review of Research in Open and Distance E-Larning*. 15 (2), 26-42.

Kerlinger, F. N. (1992). Foundations of Behavioural Research (3rd ed.). New York: Holt, Rinehart & Winston.

Khorsandi, K. A. (2014). *A critical policy analysis of internationalization in postsecondary education: An Ontario case study*. Ontario: Western University.

Kiamba, C. (2016). An innovative model of funding higher education in Kenya: The universities fund. In P. A. Okebukola (Ed.), *Towards innovative models for funding higher education in Africa* (pp. 25–38). Retrieved from http://www.adeanet.org/en/system/files/resources/aaufunding-book.

Kurelovic, E. K. (2016). Advantages and limitations of usage of open educational resources in small countries. *International Journal of Research in Education and Science (IJRES)*, 2(1), 136-142.

Kurelović, E. K. (2018). Open access culture and acceptance of open educational resources in Croatian public universities. *Zbornik Veleučilišta u Rijeci, Journal* 6, (1), pp. 39-50

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement.* 2 (2), 1-16.

Lawrence, C. N., & Lester, J. A. (2018). Evaluating the effectiveness of adopting open educational resources in an introductory American government course. *Journal of*
Political Science Education, 14(4), 555 566. DOI: 10.1080/15512169.2017.142 2739.

Liang, L. (2004). Guide to Open content licence. Piet Zwart Institute for postgraduate studies and research. Willem de Kooning Academy Hogeschool Rotterdam. Retrieved from: http://pzwart.wdka.hro.nl/mdr/research/lliang/open_content_guide/

Liebenberg, J. Benadé, T., & Ellis, S. (2018). Acceptance of ICT: Applicability of the Unified Theory of Acceptance and Use of Technology (UTAUT) model to South African student's research paper. *The African Journal of Information Systems,* 10 (3), 160-173.

Margulies, A. (2005). Types of Educational Resources: Open Course Ware Massachusetts
Institute of Technology. http://www.unesco.org/iiep/virtualuniversity/forumsfic he.php

Mishra, S., Sharma, M., Sharma, R. C., Singh, A., & Thakur, A. (2016). Development of a scale to measure faculty attitude towards open educational resources. *International Council for Open and Distance Education,* 8 (1), 55–69

Motteram, G. (Ed.) (2017). Teaching and technology: Case studies form India, New Delhi: British council and central square foundation. Retrieved from https://englishagenda.britishcouncil.org/sites/default/files/attachments/teaching_ and_technology_case_studies_from_india_final_low_res_new

Mtebe, J. S., & Raisamo, R. (2014a). Challenges and instructors' intention to adopt and use open educational resources in higher education in Tanzania. *International Review of Research in Open and Distance Learning*, 15(1), 250–271. Retrieved from:http://www.irrodl.org/index.php/irrodl/article/view/1687/2771

Mtebe, J. S., & Raisamo, R. (2014b). Investigating perceived barriers to the use of open educational resources in higher education in Tanzania. *International Review of Research in Open and Distance Learning*, 15(2), 43–65. Retrieved from: http://www.irrodl.org/index.php/irrodl/article/view/1803/2841

National Planning Commission, (2017). *The National ICT roadmap* (2017–2020). Retrieved from http://www.niimp.gov.ng/?page_id=1218

Nayantara, P. (2018). Acceptance and usability of OER in Indian higher education: An investigation using UTAUT model. *International Journal for Open and Distance Education,* 10 (1), 55–65

Nsofor, C. C., & Bello, A. (2015). *Emerging trends in educational technology.* Ibadan, Nigeria: Evi-cole Press.

NUC, (2017). List of approved distance learning centres. Retrieved from http://nuc.edu.ng/distance-learning-centers/

Nwabachili, C. C. (2016). *Intellectual property law and practice in Nigeria.* Lagos, Nigeria: Malthopuse Press.

OECD, (2016), *Innovating education and educating for innovation: The power of digital technologies and skills*, OECD Publishing, Paris.

OER Policy, (2017). *Open educational resources policy for higher education in Nigeria.* Commonwealth of Learning Burnaby, British Columbia.

Ofoegbu, O. T., Asogwa, U. D., & Ogbonna, C. S. (2021). Open educational resources (OERs) and courseware development in dual-mode Universities in Nigeria. *Education Technology Research and Development,* 6 (9), 1811–1833. https://doi.org/10.1007/s11423-021-10014-7

Open Knowledge Foundation, (2013). Open Data Handbook - What is open data? Retrieved from http://opendatahandbook.org/en/what-is-open-data/

Orr, D., Rimini, M., & Van Damme, D. (2015). *Open Educational Resources: A catalyst for innovation, educational research and innovation*. Paris: OECD Publishing. Retrieved from http://dx.doi.org/10.1787/9789264247543-en

Ozdemir, O., & Bonk, C. J. (2017). Turkish teachers' awareness and perceptions of open educational resources. *Journal of Learning for Development,* 4, (3), 307-321.

Padhi, N. (2018). Acceptance and usability of OER in Indian higher education: An investigation using UTAUT model. *Open Praxis Journal,* 10 (1), 55–65.

Panda, S., & Santosh, S. (2017). Faculty perception of openness and attitude to open sharing at the Indian national open university. *International Review of Research in Open and Distributed Learning*, 18 (7), 14-36. https://doi.org/10.19173/irrodl.v14i1.1351

Percy, T., & Belle, J. V. (2016). Exploring the barriers and enablers to the use of open educational resources by university academics in Africa. *Journal of Advances in Information and Communication Technology,* 6 (6), 24-39. DOI: 10.1007/978-3-642-33442-98

Reed, P. (2012). Awareness, attitudes and participation of teaching staff towards the open
content movement in one university. *Journal of Research in Learning Technology*, 4 (6), 20-34.

Robinson, T. J. (2015). The effects of open educational resource adoption on measures of post-secondary student success. PhD. dissertation. Brigham Young University.

Rolfe, V. (2012). Open educational resources: Staff attitudes and awareness. *Journal of Research in Learning Technology*, 20 (1), 1-13 Retrieved from: DOI: 10.3402/rlt.v20i0/14395

Salim, B. (2012). An application of UTAUT model for acceptance of social media in Egypt: A statistical study. *International Journal of Information Science,* 2 (6), 92-105. Retrieved from: DOI: 10.5923/j.ijis.20120206.05

Samzugi, A. S., & Mwinyimbegu, C. M. (2013). Accessibility of open educational resources for distance education learners: The case of the open university of Tanzania. *Huria Journal of Information Technology*, 1(4), 76-88.

Sharma, M., Mishra, S., & Thakur, A. (2014). Development and validation of a scale to measure faculty attitudes towards open education resources. *Proceedings of the 28th AAOU Annual Conference, The Open University of Hong Kong, 28–31 October* (pp. 618–624).

Singh, A., Bansal, R. K., & Jha, N. (2015). Open source software Vs proprietary software. *International Journal of Computer Applications,* 2 (3), 1-14.

Skaik, H. A., & Othman, R. (2017). Knowledge sharing behaviour and its predictors in United Arab Emirates Universities. *International Journal of Human-Computer Studies,* 2 (2), 65–73

Stenius, M., Hankonen, N., Ravaja, N., & Haukkala, A. (2016). Why share expertise? A closer look at the quality of motivation to share or withhold knowledge. *Journal of Knowledge Sharing Behaviour,* 2(2), 23-34

Tashakkori, A., & Teddlie, C. (Eds.). (2003). Handbook of mixed methods in the social and behavioural sciences. Thousand Oaks, CA: Sage.

Torres, N. P. M. (2013). Embracing openness: The challenges of OER in Latin American education. *Open Praxis Journal*, 5 (1), 81-89. Retrieved from http://openpraxis.org/index.php/OpenPraxis/article/view/33

UNESCO (United Nations Educational, Scientific and Cultural Organization). (2017). Ljubljana OER action plan. Paris: United Nations Educational, Scientific and Cultural Organization. Retrieved from https://en.unesco.org/sites/default/files/ljubljana_oer_action_plan_2017.

UNESCO, (2012). 2012 Paris OER Declaration. Retrieved from http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/Events/Paris%20OER%20Declaration_01

UNESCO–IICBA (United Nations Educational, Scientific and Cultural Organization–International Institute for Capacity Building in Africa). (2016). Teaching policies and learning outcomes in Sub-Saharan Africa: Issues and options. Addis Ababa: United Nations Educational, Scientific and Cultural Organization. Retrieved from http://unesdoc.unesco.org/images/0024/002465/246501e.

Van-Acker, F., Vermeulen, M., Kreijns, K., Lutgerink, J., & Van-Buuren, H. (2015). The role of knowledge sharing self-efficacy in sharing open educational resources. *Perspectives Journal on Open and Distance Learning*, 2 (3), 1-36

Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003). User acceptance of information technology: Toward a unified view. *Quarterly Journal of Management Information System,* 27 (3), 425–478. Retrieved from https://doi.org/10.2307/30036540

Walji, S., & Hodgkinson-Williams, C. (2017a). Understanding the nature of OEP for OER adoption in global South contexts: Emerging lessons from the ROER4D project. Presented at OER17, 5–6 April 2017. London, UK. Retrieved from https://www.slideshare.net/ ROER4D/

Waring, M., & Evans, C. (2015). Understanding pedagogy: Developing a critical approach to teaching and learning. New York: Routledge.

Wiley, D., & Hilton, J. (2009). Openness, dynamic specialization, and the disaggregated future of higher education. *The International Review of Research in Open and Distributed Learning*, 10 (5), 12-28. Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/768/1414

Wiley, D. (2006). The current state of open educational resources. Blog. Iterating toward openness. Accessed January 2011, http://opencontent.org/blog/archives/247

Wiley, D. (2015). The MOOC misstep and the open education infrastructure. In Bonk, C., J., Lee, M. M., Reeves, T. C., & Reynolds, T. H. (Eds.), MOOCs and open education around the world (pp. 3-11). New York, NY: Routledge.

Wiley, D. (2017). Iterating toward openness: Lessons learned on a personal journey. In R. S. Jhangiani & R. Biswas-Diener (Eds.), Open: The philosophy and practices that are revolutionizing education and science (pp. 195–207). London, UK: Ubiquity Press.

Wilson, T. (2018). New Ways of Mediating Learning: Investigating the implications of adopting open educational resources for tertiary education at an institution in the United Kingdom as compared to one in South Africa. *International Review of Research in Open and Distance Learning*, 9(1), 1-19.

Wolfenden, F., Auckloo, P., Buckler, A., & Cullen, J. (2017). Teacher educators and OER in East Africa: Interrogating pedagogic change. In C. Hodgkinson-Williams & P. B. Arinto (Eds.). Adoption and impact of OER in the Global South (pp. 251–286). Retrieved from https://doi.org/10.5281/zenodo.600424

WIPO, (2022). World Intellectual Property Organization: *Global Innovation Index 2022: What is the future of innovation-driven growth?* Geneva: WIPO. DOI 10.34667/tind.46596

Yeravdekar, V. R., & Tiwari, G. (2014). Internationalization of higher education and its impact on enhancing corporate competitiveness and comparative skill formation. *International relations conference on India and development partnerships in*

Asia and Africa: Towards a new paradigm. Proceedings of Social and Behavioural Sciences 203 – 209.

Yogesh K. D., Nripendra, P. R., Anand, J., Marc, C., & Michael, D. W. (2017). Re-examining the Unified Theory of Acceptance and Use of Technology (UTAUT): Towards a Revised Theoretical Model. *Journal of Information Management,* 33 (4), 213–224. DOI 10.1007/s10796-017-9774-y

Zagdragchaa, B., & Trotter, H. (2017). Cultural-historical factors influencing OER adoption in Mongolia's higher education sector. In C. Hodgkinson-Williams & P. B. Arinto, (Eds.), Adoption and impact of OER in the Global South (pp. 389–424). Retrieved from https://doi.org/10.5281/zenodo.599609

Zhang, M., & Li, Y. (2017). Teaching experience on faculty members' perceptions about the attributes of open educational resources (OER). *International Journal of Electronic Teaching,* 12 (4), 191-199 Retrieved from: https://doi.org/10.3991/ijet.v12i04.6638

APPENDIX A

Distribution of Lecturers in the Six (6) Federal Universities in North-East Nigeria.

S/N	Universities	Population	Sample
1	Abubakar Tafawa-Balewa University, Bauchi State.	112	66

2	Federal University of Kashere, Gombe State.	126	126
3	Federal University Gashua, Yobe State.	Nil	Nil
4	Modibbo Adama University of Technology, Yola.	88	76
5	Federal University Wukari, Taraba State.	89	89
6	University of Maiduguri, Borno State	217	196
	Total	**632**	**338**

Source: Establishment Unit of the respective Universities, (2019).

APPENDIX B
RESEARCH QUESTIONNAIRE

Department of Educational Technology
School of Science and Technology Education
Federal University of Technology Minna, Niger State, Nigeria

Questionnaire on Lecturers Acceptance and Use of Open Educational Resources

Participant information

In the questionnaire you are about to fill, questions which make use of rating scales with five options were asked; you are to tick "√" in the box that best describes your opinion. The survey will investigate the Determinants of Lecturers' Acceptance and Use of Open Educational Resources (OER) for Knowledge Sharing in Universities of North-East, Nigeria.

OER is an internet-based repository for sharing educational resources such as lecture notes, textbooks, streaming videos, multimedia applications, podcasts, journals and any other materials that have been designed for use in teaching and learning which are made openly available for use by educators and students, without the accompanying need to pay royalties or license fees (UNESCO, 2012).

Given the background of OER, kindly read the statements carefully and provide information on each item stated below. Please note that the information provided was use in improving the uptake of OER in Universities of North-East, Nigeria and participants' personal details was kept anonymous.

Thank you in anticipation of your cooperation and understanding. If you have any question regarding the survey, do not hesitate to contact me.

Bello, Ahmed
Researcher

SECTION 'A'

Demographic Data of Respondents

***Please tick out** the responses with '* ✓

Department: _____ **Gender:** Male ☐ Female ☐

S/N	***Qualification***	***Response***	***Rank/Cadre***	***Response***	***Years of Working Experience***	***Response***
1	PhD		Professorial		21-35 years	
2	Masters' Degree		Senior Lecturer		11-20 years	
3	Bachelor Degree		Lecturer I, II, AL and GA		0-10 years	
	Familiarity with OER in years	***Response***	***Device for Accessing OER***	***Response***	***Frequency of Accessing OER Repository***	***Response***
1	15 years and above		Desktop computer		Daily	
2	10-15 years		Laptop		Weekly	
3	5-10 years		Tablet		Monthly	
4	0-5 year		Smart phone		Occasionally	

SECTION "B"
LECTURERS' ACCEPTANCE TO SHARE OER

Please rate how much you agree/disagree with each statement using the scale below:
1=Strongly Disagree **SD**| **2**=Disagree **D**| **3**=Undecided **UD**| **4**=Agree **A**| **5**=Strongly Agree **SA**

S/N	Performance Expectancy on Lecturers' Acceptance to Share OER	SD	D	U	A	SA
1	Developing and sharing resources on the university OER repository will improve my academic writing skills.					
2	Sharing resources on OER will enable me get feedback from colleagues and students on how to further improve my academic knowledge.					
3	Sharing OER will enhance my confidence and academic productivity, as I see myself as part of the larger community.					
4	Sharing resources on OER will enable me fulfill the community service component of my lecturing job.					
5	Uploading resources on OER will improve my computer and internet skills.					
6	My resources on OER will increase my academic network and sphere of influence.					
7	Accepting to share OER will improve my research knowledge at the university.					
S/N	**Effort Expectancy on Lecturers' Acceptance to Share OER**	**SD**	**D**	**U**	**A**	**SA**
1	I find visiting the university OER repository very easy.					
2	I find navigating the university OER repository straight forward and less cumbersome.					
3	I find the URL link to my university OER repository highly responsive.					
4	I find the university OER repository user friendly and so developing and uploading resources becomes easy.					
5	Due to its flexibility, I use my computer, tablet and mobile phone to visit the university OER repository.					
6	Sharing resources on OER repository comes easy once I am connected to the internet.					
7	Selecting where a particular resource can reside in the OER repository is easy.					
8	Locating a particular resource to share from my computer directory is free of effort.					
S/N	**Social Influence on Lecturers' Acceptance to Share OER**	**SD**	**D**	**U**	**A**	**SA**
1	My colleagues in Commonwealth of Learning (COL) expect me to upload course materials and make them freely available for download and adaption by community of users.					
2	My colleagues in OER community think I should share teaching resources to make presence in the world OER map.					
3	My co-lecturers in the university think we should collaborate to share teaching resources on OER repository.					
4	My senior colleagues in the university expect to see my resources on OER repository.					
5	My students in the university think I should share teaching resources on OER.					

6	My mentees in the university think I should upload my resources on OER for their academic guidance.					
7	Lecturers who are important to me in the university think I should share my teaching resources on OER.					
8	My students who have concern for computer virus think I should share my teaching resources on OER.					
9	My Head of Department think I should upload my resources on OER as directed by the university administration.					
10	My colleagues in other faculties are looking up to seeing my resources on the university OER.					
S/N	**Facilitating Conditions on Lecturers' Acceptance to Share OER**	**SD**	**D**	**U**	**A**	**SA**
1	My university has ICT centre and a robust internet connectivity that make OER repository always available.					
2	I have computer and the internet skill necessary to develop and upload teaching resources on OER.					
3	I have the knowledge of computer and the internet necessary to integrate OER into my courses.					
4	My university has already developed OER policy which I am encouraged to accept.					
5	OER administrators are available for guidance in developing and uploading the teaching resource.					
6	Technical assistants are available to help me in sharing teaching resources to OER repository and integrating it into my courses.					
7	The university management is ready to reward lecturers who share their teaching resources on OER repository.					
8	The university has steady electricity and a stand-by generating plant that facilitate the development and sharing of OER to the community.					
S/N	**Acceptance to Share OER**	**SD**	**D**	**U**	**A**	**SA**
1	I accept OER repository as a digital content sharing domain for all university lecturers and students to benefit from.					
2	I accept to share my resources in compliance with OER policy for higher education in Nigeria.					
3	I accept to share all the resources I have in my possession to the university OER for public use.					
4	I accept to forgo some possible financial benefits that may accrue from the sale of my resources such as textbooks, streamed videos and courseware.					
5	I accept to share my resources as OER with no concern for losing intellectual rights and control of these resources.					
6	I can direct my students to share OER they find useful to the university community and other institutionally based OER repositories.					
7	I intend to become an advocate for encouraging constant sharing of resources on the university OER repository.					

SECTION "C"
LECTURERS' USE OF THE SHARED OER

Please rate how much you agree/disagree with each statement using the scale below:
1=Strongly Disagree **SD**| **2**=Disagree **D**| **3=**Undecided **UD**| **4=**Agree **A**| **5=**Strongly Agree **SA**

S/N	Performance Expectancy on Lecturers' Use of the Shared OER	SD	D	U	A	SA
1	Using the shared OER will enhance my teaching effectiveness.					
2	Using the shared OER will improve the quality of my research work.					
3	Reusing OER shared by co-lecturers will save me time in developing lecture materials.					
4	Remixing the shared OER will improve my course development skills.					
5	Using the shared OER will allow me to have access to current information about the courses I teach.					
6	Using the shared OER will give me variety of resources that will increase the quality of courses I developed.					
7	Redistributing OER will increase my academic network and sphere of influence.					
S/N	**Effort Expectancy on Lecturers' Use of the Shared OER**	**SD**	**D**	**U**	**A**	**SA**
1	The flexibility of the university OER repository allow me to use my computer, tablet and mobile phone to access the shared OER.					
2	Navigating through the university OER is with less stress.					
3	It is easy for me to become skilful at reusing, revising and remixing OER.					
4	I find downloading and using the shared OER easy.					
5	Using OER will enable me to accomplish course development activities more rapidly.					
6	I find it is easy to search for a usable OER that can suit my class.					
7	My students do not find it challenging to download OER I shared for their use.					
S/N	**Social Influence on Lecturers' Use of the Shared OER**	**SD**	**D**	**U**	**A**	**SA**
1	My co-lecturers in the university think I should use the shared resources on OER repository to develop my lecture notes.					
2	My senior colleagues in the university are expecting me to adapt resources from OER repository to enrich my lecture contents.					
3	My students in the university think I should use OER repository to share teaching resources.					
4	My mentees in the university think I should remix variety of resources from OER for their academic guidance.					

5	Lecturers who are important to me in the university think I should use OER to reduce the time spent in course development.					
6	My students who have concern for computer virus think I should use OER repository as a sharing medium.					
7	My Head of Department think I should use the shared resources on OER as directed by the university administration.					
	Facilitating Conditions on Lecturers' Use of the Shared OER	**SD**	**D**	**U**	**A**	**SA**
1	I have computer and the internet skill necessary to remix and redistribute teaching resources on OER.					
2	The availability of technical assistants stimulated me to integrate OER into my courses.					
3	The OER policy directive encourages me to use OER.					
4	The expected reward from the university management will encourage me to use the shared OER.					
5	The availability of OER repository on handheld devices will encourage me to use it.					
6	The friendliness of the OER repository interface will inspire me to use the shared resources on OER.					
S/N	**Use of Shared OER**	**SD**	**D**	**U**	**A**	**SA**
1	I am ready to download the shared resources from the university OER and modify them to meet the needs of my students.					
2	I can apply the 5Rs (reuse, remix, revise, retain and redistribute) to create teaching resources, attach open license and share them on the university OER for my students.					
3	I have a plan to use the shared resources on the university OER repository if it is available.					
4	I intend to direct my students to use resources shared on the university OER repository.					
5	I intend to encourage constant use of resources shared to the university OER repository.					
6	I plan to use resources shared to the university OER repository for co-creation, collaborative resource development and interdisciplinary research.					

APPENDIX C

FOCUS GROUP INTERVIEW PROTOCOL ON
LECTURERS' ATTITUDE TOWARDS KNOWLEDGE SHARING ON OER AND THE USE OF SHARED OER IN UNIVERSITIES OF NORTH-EAST NIGERIA.

SECTION A:
LECTURERS' ATTITUDE TOWARD KNOWLEDGE SHARING ON OER

1. Please could you tell us your name and your administrative position and say a few words to introduce yourself
2. What *do you think about sharing* your personally developed teaching and learning resources in your possession for public use?
3. To what extent do you think *expected academic skills and overall productivity* from the use of OER will influence lecturers' attitude to share knowledge on OER repository?
4. In what ways do you consider the *expectation of lecturers perceived easiness* of OER activities such as locating, selecting and uploading resources to influence their attitude toward knowledge sharing?
5. How do you consider *social cohesion among academic community* such as the online community, senior colleagues, co-lecturers and students to influence lecturers' attitude toward knowledge sharing on OER?
6. How can you evaluate the university *management's commitment* to technical infrastructure (collection of hardware, software, networks, data centres, power supply, facilities and related equipment) as a preparation for OER uptake to influence lecturers' attitude toward knowledge sharing activities on OER repository?
7. Is there anything you would like to add as a condition for stimulating lecturers' attitude in knowledge sharing on OER?

SECTION B

LECTURERS' ATTITUDE TOWARD THE USE OF SHARED OER

1. The major pillars of academic job are teaching, research and community services. How do you consider *lecturers' expected productivity outcomes* as a result of engaging with OER will influence their attitude toward using the shared lecture notes, streamed videos and research findings?
2. In what important ways do you think *lecturers expected usage capabilities* to influence their attitude toward the use of shared OER?
3. The objective of OER is promoting the idea of open exchange and collaborative participation. How do you consider *lecturers' social inclinations* such as opinions of colleagues, faculty applaud and peer approval to stimulate a positive attitude toward the use of shared OER?
4. In your experience as a university lecturer, in what ways do you think infrastructural facilities put in place for OER uptake in the university are enough to influence lecturers' attitude toward the use of shared OER?
5. Is there anything you would like to add as a condition for stimulating lecturers' attitude toward the use of shared OER?

APPENDIX D

EXPERT VALIDATION REPORT FORMS

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY

Dear Sir/Madam,

Instrument Validation Form

The bearer is a student of the above named University and Department. She/he is conducting a research and you have been selected as one of those with requisite expertise to validate his/her instrument. Kindly grant him/her all necessary assistance to make the exercise a success.

Your competency and expertise was considered as factors that will serve to improve the quality of his/her research instrument. We therefore crave for your assistance in validating the instrument. The completion of the form serves as evidence that the student actually validated the instrument

Thanks for your anticipated assistance.

Dr ALABI, THOMAS Omotayo 20 NOV 2019

Head of Department (Signature, Date & Official Stamp)

Student's Surname..BELLO..... Other Names..AHMED

Registration Number PhD/SSTE/2012/1112. Programme..EDUCATIONAL TECHNOLOGY

Title of the Instrument DETERMINANTS OF LECTURERS ACCEPTANCE, USE AND ATTITUDE TOWARD OPEN EDUCATIONAL RESOURCES FOR KNOWLEDGE SHARING IN UNIVERSITIES OF NORTH-EAST NIGERIA

ATTESTATION SECTION

Summary of the Remark on the Instrument.....The Instrument is Comprehensive and Compatible with the study objectives.

.....

I hereby attest that the above named student brought his instrument for validation

Name of Attester.....Dr. A.T. Shittu.....

Designation.....Senior Lecturer.....

Name and Address of Institution..Federal University of Kashere, Gombe State

Phone Number...08162182220.....E.- Mail.....

Please comment on the following

1. Appropriateness of the instrument for the purpose it's design for. The instrument is appropriate for the study.
2. Clarity and simplicity for the level of the language used. The language is clear and simple for the respondents
3. Suability for the level of the targeted audience. Suitable for the intended population
4. The extent in which the items cover the topic it meant to cover. The items covered all the constructs of the study.
5. The structuring of the Questionnaire. Questions are well structured and logical.
6. Others (grammatical errors, spelling errors and others. There are minimal grammatical errors and are corrected
7. General overview of the Instrument. Comprehensive and suitable for the study.

Suggestions for improving the quality of the Instrument

1. The lead Questions for the interview protocol should
2. come from the main constructs.
3. .....
4. .....
5. .....

Name of Validator. Dr. A.T. Shittu

Area of Specialization. Instructional Technology.

Name of Institution. Federal University of Kashere Designation.....

Signature. ..... Date. Snr. Lec.

Thank You

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY

Dear Sir/Madam,

Instrument Validation Form

The bearer is a student of the above named University and Department. She/he is conducting a research and you have been selected as one of those with requisite expertise to validate his/her instrument. Kindly grant him/her all necessary assistance to make the exercise a success.

Your competency and expertise was considered as factors that will serve to improve the quality of his/her research instrument. We therefore crave for your assistance in validating the instrument. The completion of the form serves as evidence that the student actually validated the instrument

Thanks for your anticipated assistance.

20 NOV 2019

Dr ALABI, Thomas Omotayo

Head of Department (Signature, Date & Official Stamp)

Student's Surname. BELLO ..... Other Names. AHMED

Registration Number PhD/SSTE/2018/112 .. Programme. EDUCATIONAL TECHNOLOGY

Title of the Instrument DETERMINANTS OF LECTURERS ACCEPTANCE, USE AND ATTITUDE TOWARDS OPEN EDUCATIONAL RESOURCES FOR KNOWLEDGE SHARING IN UNIVERSITIES OF NORTH-EAST NIGERIA.

ATTESTATION SECTION

Summary of the Remark on the Instrument. THE INSTRUMENT LOOKS ADEQUATE AND COMPREHENSIVE FOR THE PURPOSE OF THE STUDY

I hereby attest that the above named student brought his instrument for validation

Name of Attester. Dr Yaki, A. A.

Designation. LECTURER 1

Name and Address of Institution.....

Phone Number.....E.- Mail.....

Please comment on the following

1. Appropriateness of the instrument for the purpose it's design for..... VERY APPROPRIATE.....
2. Clarity and simplicity for the level of the language used... VERY CLEAR AND SIMPLE LANGUAGE WAS USED.....
3. Suability for the level of the targeted audience ..... TARGET ..... VERY SUITABLE FOR THE POPULATION .....
4. The extent in which the items cover the topic it meant to cover..... SATISFACTORY .....
5. The structuring of the Questionnaire..... .....
6. Others (grammatical errors, spelling errors and others..... MINOR GRAMMATICAL ERRORS .....
7. General overview of the Instrument..... SATISFACTORY SUBJECT TO MINOR CORRECTION .....

Suggestions for improving the quality of the Instrument

1. ALL SUGGESTIONS AND OBSERVATIONS ARE
2. HIGHLIGHTED IN THE INSTRUMENT
3. .....
4. .....
5. .....

Name of Validator..... Dr YAKI, A. A .....

Area of Specialization.....

Name of Institution.....

Signature..... Designation..... L1 .....

Date..... 17/01/2020

Thank You

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY

Dear Sir/Madam,

Instrument Validation Form

The bearer is a student of the above named University and Department. She/he is conducting a research and you have been selected as one of those with requisite expertise to validate his/her instrument. Kindly grant him/her all necessary assistance to make the exercise a success.

Your competency and expertise was considered as factors that will serve to improve the quality of his/her research instrument. We therefore crave for your assistance in validating the instrument. The completion of the form serves as evidence that the student actually validated the instrument

Thanks for your anticipated assistance.

20 NOV 2019

Dr ALABI, THOMAS OMOTAYO

Head of Department (Signature, Date & Official Stamp)

Student's Surname. BELLO ..... Other Names. AHMED

Registration Number. PhD/SSTE/2018/1112 Programme. EDUCATIONAL TECHNOLOGY

Title of the Instrument. DETERMINANTS OF LECTURERS ACCEPTANCE, USE AND ATTITUDE TOWARDS OPEN EDUCATIONAL RESOURCE FOR KNOWLEDGE SHARING IN UNIVERSITIES ATTESTATION SECTION OF NORTH-EAST NIGERIA.

Summary of the Remark on the Instrument. Good instrument

.....

.....

I hereby attest that the above named student brought his instrument for validation

Name of Attester. Dr S.A Owodunni

Designation. Snr Lect

Name and Address of Institution. FUT Minna

Phone Number. 07067229015 E.- Mail. s.owodunni@futminna.e.ng

Please comment on the following

1. Appropriateness of the instrument for the purpose it's design for... The instrument is appropriate for the purpose it was designed for
2. Clarity and simplicity for the level of the language used.....
   The language is simple and clear
3. Suability for the level of the targeted audience ... The instrument is suitable for the targeted population
4. The extent in which the items cover the topic it meant to cover.....
   The items covered all the required topics
5. The structuring of the Questionnaire.... The questionnaire is well structured and carefully planned
6. Others (grammatical errors, spelling errors and others)... The errors are minor
7. General overview of the Instrument... The instrument is adequate for the title

Suggestions for improving the quality of the Instrument

1. The researcher can generate more
2. items on each research question to
3. reflect PhD work
4. .....
5. .....

Name of Validator... Dr. S. A. Oluduro

Area of Specialization... ITE/E/E

Name of Institution... FUT Minna ...Designation... Snr Lecturer

Signature... ...Date... 15/11/2022

Thank You

APPENDIX E1

RELIABILITY RESULTS OF QUESTIONNAIRE ON

LECTURERS' ACCEPTANCE TO SHARE OER

SCALE 1: Performance Expectancy on Lecturers' Acceptance to Share OER

Case Processing Summary

		N	%
Cases	Valid	60	100.0
	Excluded[a]	0	.0
	Total	60	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.956	.957	7

Item Statistics

	Mean	Std. Deviation	N
PE	2.92	1.598	60
PE	2.93	1.448	60
PE	2.72	1.462	60
PE	2.87	1.359	60
PE	2.77	1.555	60
PE	2.93	1.471	60
PE	2.57	1.442	60

SCALE 2: Effort Expectancy on Lecturers' Acceptance to Share OER

Case Processing Summary

		N	%
Cases	Valid	60	100.0
	Excluded[a]	0	.0
	Total	60	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.925	.925	8

Item Statistics

	Mean	Std. Deviation	N
EE	3.17	1.291	60
EE	3.03	1.149	60
EE	2.95	1.268	60
EE	2.75	1.230	60
EE	2.87	1.308	60
EE	2.73	1.233	60
EE	2.87	1.142	60
EE	2.75	1.216	60

SCALE 3: Social Influence on Lecturers' Acceptance to Share OER

Case Processing Summary

		N	%
Cases	Valid	60	100.0
	Excluded[a]	0	.0
	Total	60	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.955	.955	10

Item Statistics

	Mean	Std. Deviation	N
SI	2.83	1.251	60
SI	2.80	1.219	60
SI	2.87	1.049	60
SI	2.80	1.273	60
SI	3.00	1.221	60
SI	2.88	1.329	60
SI	2.83	1.167	60
SI	2.72	1.290	60
SI	3.00	1.315	60
SI	2.87	1.308	60

SCALE 4: Facilitating Conditions on Lecturers' Acceptance to Share OER

Case Processing Summary

		N	%
Cases	Valid	60	100.0
	Excluded[a]	0	.0
	Total	60	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.879	.879	8

Item Statistics

	Mean	Std. Deviation	N
FC	2.82	1.242	60
FC	3.12	1.303	60
FC	2.93	1.351	60
FC	2.82	1.269	60
FC	2.62	1.195	60
FC	2.58	1.306	60
FC	2.63	1.221	60
FC	2.80	1.273	60

SCALE 5: Acceptance to Share OER

Case Processing Summary

		N	%
Cases	Valid	60	100.0
	Excluded[a]	0	.0
	Total	60	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.948	.947	7

Item Statistics

	Mean	Std. Deviation	N
AS	3.12	1.367	60
AS	2.87	1.420	60
AS	2.77	1.395	60
AS	2.90	1.160	60
AS	2.75	1.230	60
AS	2.58	1.319	60
AS	2.80	1.286	60

APPENDIX E2
RELIABILITY RESULTS OF QUESTIONNAIRE ON LECTURERS' USE OF THE SHARED OER

SCALE 1: Performance Expectancy on Lecturers' Use of the Shared OER

Case Processing Summary

		N	%
Cases	Valid	60	100.0
	Excluded[a]	0	.0
	Total	60	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.973	.973	7

Item Statistics

	Mean	Std. Deviation	N
PE	2.87	1.443	60
PE	2.82	1.501	60
PE	2.82	1.444	60
PE	2.85	1.424	60
PE	2.73	1.471	60
PE	2.88	1.485	60
PE	2.77	1.382	60

SCALE 2: Effort Expectancy on Lecturers' Use of the Shared OER

Case Processing Summary

		N	%
Cases	Valid	60	100.0
	Excluded[a]	0	.0
	Total	60	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.958	.958	7

Item Statistics

	Mean	Std. Deviation	N
EE	2.92	1.357	60
EE	2.70	1.430	60
EE	2.83	1.428	60
EE	2.82	1.321	60
EE	2.98	1.396	60
EE	2.70	1.293	60
EE	2.75	1.323	60

SCALE 3: Social Influence on Lecturers' Use of the Shared OER

Case Processing Summary

		N	%
Cases	Valid	59	98.3
	Excluded[a]	1	1.7
	Total	60	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.962	.962	7

Item Statistics

	Mean	Std. Deviation	N
SI	2.71	1.274	59
SI	2.75	1.294	59
SI	2.75	1.268	59
SI	2.85	1.311	59
SI	2.76	1.208	59
SI	2.83	1.289	59
SI	2.73	1.229	59

SCALE 4: Facilitating Conditions on Lecturers' Use of the Shared OER

Case Processing Summary

		N	%
Cases	Valid	60	100.0
	Excluded[a]	0	.0
	Total	60	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.947	.949	6

Item Statistics

	Mean	Std. Deviation	N
FC	2.92	1.499	60
FC	2.90	1.469	60
FC	2.83	1.330	60
FC	2.80	1.400	60
FC	2.87	1.268	60
FC	2.58	1.453	60

SCALE 5: Use of Shared OER

Case Processing Summary

		N	%
Cases	Valid	60	100.0
	Excluded[a]	0	.0
	Total	60	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.960	.960	6

Item Statistics

	Mean	Std. Deviation	N
US	3.03	1.414	60
US	2.98	1.432	60
US	3.03	1.461	60
US	2.90	1.458	60
US	2.87	1.408	60
US	2.80	1.527	60

APPENDIX F
CONSTRUCTS AND NUMBER OF MEASURED ITEMS IN THE RESEARCH MODEL

S/N	Constructs	Abbreviations	Number of Measured Items	Cronbach Alpha	Remarks
1	Performance Expectancy	PE	7	.956	Excellent
2	Effort Expectancy	EE	8	.925	Excellent
3	Social Influence	SI	10	.955	Excellent
4	Facilitating Conditions	FC	8	.879	Good
5	Acceptance to Share OER	AS	7	.948	Excellent
6	Performance Expectancy	PE	7	.973	Excellent
7	Effort Expectancy	EE	7	.958	Excellent
8	Social Influence	SI	7	.962	Excellent
9	Facilitating Conditions	FC	6	.947	Excellent
10	Use of Shared OER	US	6	.960	Excellent
	Total	**10**	**73**		

APPENDIX G
RELIABILITY RESULT OF FOCUS GROUP INTERVIEW PROTOCOL

Lecturers' Attitude toward Knowledge Sharing on OER

Symmetric Measures

		Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Measure of Agreement	Kappa	.611	.224	3.076	.002
N of Valid Cases		7			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Lecturers' Attitude toward the Use of Shared OER

Symmetric Measures

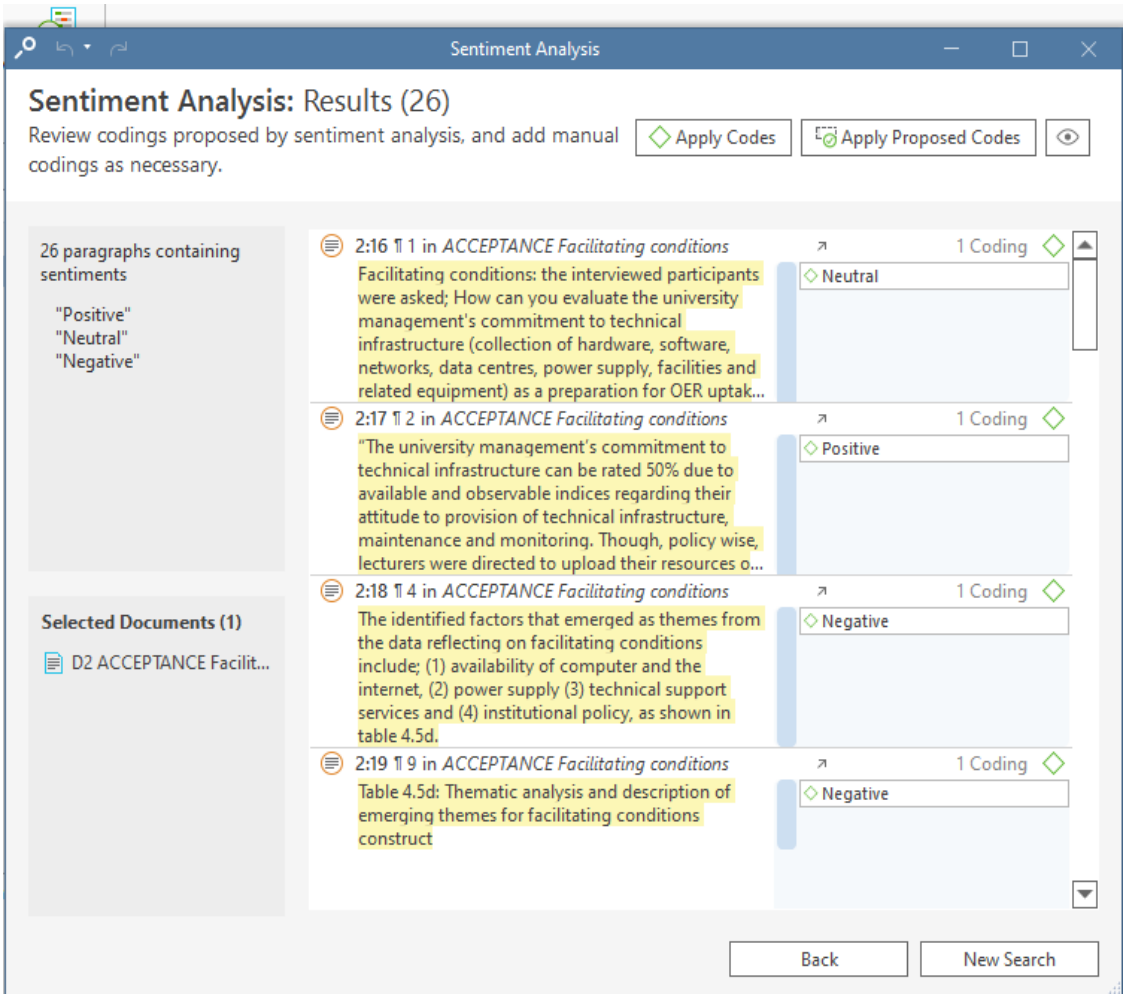
		Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Measure of Agreement	Kappa	.688	.271	2.284	.022
N of Valid Cases		5			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

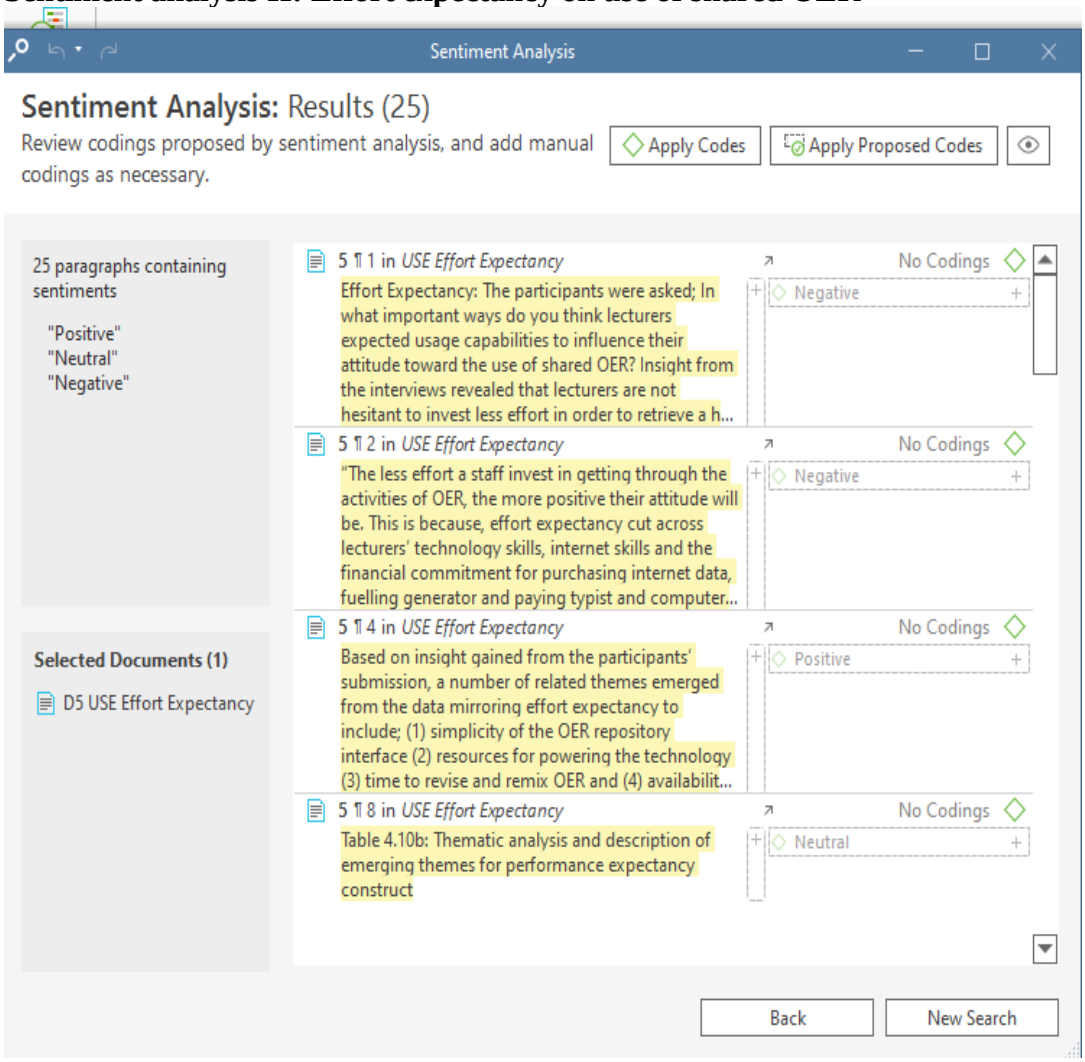
APPENDIX H

Sentiment analysis I: Facilitating conditions on Acceptance to share OER



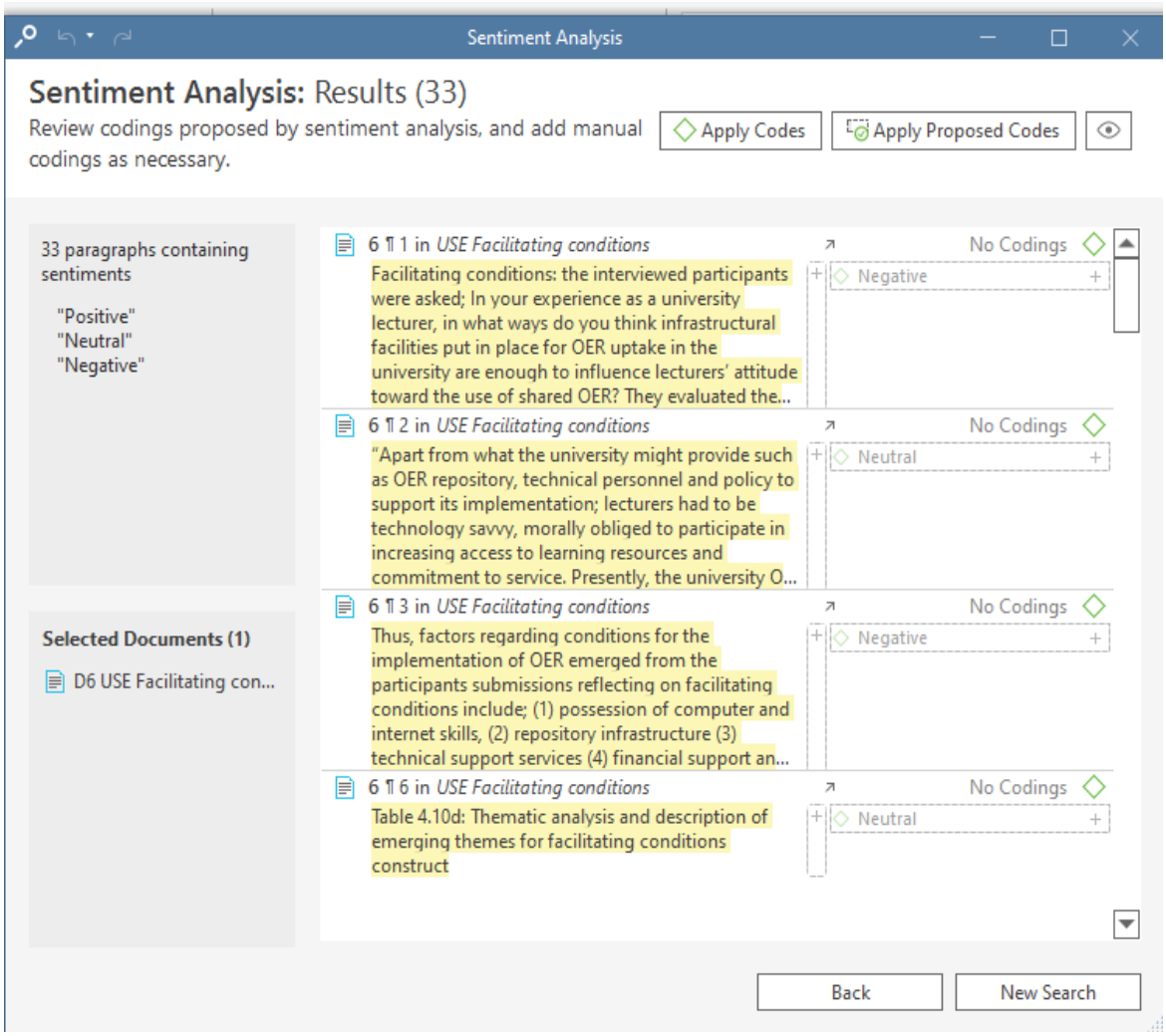
APPENDIX I

Sentiment analysis II: Effort expectancy on use of shared OER



APPENDIX J

Sentiment analysis III: Facilitating conditions on use of shared OER



APPENDIX K

Word Cloud I: Performance Expectancy on acceptance to share OER

APPENDIX L

Word Cloud II: Effort Expectancy on acceptance to share OER

APPENDIX M

Sample pictures of the Universities visited

Focus group interview session in UNIMAID

Focus group interview session in UNIMAID