



**Use of electronic information resources among doctoral students in the social sciences: a comparative study of University of Kwazulu-Natal (UKZN), South Africa and Obafemi Awolowo University (OAU), Nigeria**

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## DECLARATION

I, Omamomo Obaguono Eyaufe declare that:

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Date: 16 March 2018

## **ABSTRACT**

The study was a descriptive study which investigated the use of electronic information resources (EIRs) by social science doctoral students of University of KwaZulu-Natal (UKZN), South Africa and Obafemi Awolowo University (OAU), Nigeria. The study sought to compare the extent of EIRs use; most preferred EIRs, effect of EIRs on research work, factors that influence EIRs use and EIRs use competencies of social science doctoral students in UKZN, South Africa and OAU, Nigeria. The study was underpinned by the latest version of the technology acceptance model (TAM 3). The study was also underpinned by the post-positivism research paradigm. The study population comprised of all social science doctoral students in UKZN and OAU with the exception of students in their first year. Library staff who are in charge of EIRs in UKZN and OAU libraries were also included in the study. A census of the population was used for the study. Quantitative and qualitative data were collected through questionnaire and semi-structured interview. A pre-test of research instruments was conducted to ensure reliability and validity also advice and suggestions of the thesis supervisor were also sought. Data generated through survey questionnaire and semi-structured interviews were analyzed using Statistical Package for Social Sciences (SPSS) and thematic content analysis respectively. The study revealed that EIRs use was low among social science doctoral students of UKZN and OAU, with OAU students' use being lower. The results revealed that the internet is the most preferred EIRs by social science doctoral students from OAU and UKZN, while the least preferred EIRs is CD-ROM Databases. The result revealed that UKZN doctoral students have benefitted more from EIRs access and use. The results reveal that respondents indicated access to current and up-to-date information, availability of computer, awareness of the resource, saves time and quick, limited computer use skill and easy retrieval as the major factors that influence their use of EIRs. The study also revealed the need for policy for

EIRs to guide EIRs collection, acquisition and services in both institutions libraries. The study revealed the need for EIRs use support which was found to be none existence at OAU library and low at UKZN library to increase EIRs use. Among other things the study recommends the implementation of EIRs policy by the OAU and UKZN libraries' management to enhance EIRs services to library users. The study also recommends that support and outreach programs such as awareness campaign, training sessions at faculty level, sensitization programs and library use orientation be put in place in OAU library and beefed up in UKZN library to showcase the library's EIRs and services.

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## **DEDICATION**

I dedicate this thesis to God for keeping me throughout my study period. This thesis is also dedicated to my husband, Omuvwie and children, Ehwe, Yoma and Oke who were deprived of motherly attention during my study period.

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## LIST OF ABBREVIATIONS

ALA	American library association
AGORA	Access to Global Online Research in Agriculture
ANKOS	The Anatolian Universities Libraries Consortium
ANU	Australian National University
BEUT	Bangladesh University of Engineering Technology
BSMMU	Bangabandhu Sheikh Mujid Medical University
CD-ROM	Computer Disc-Read Only Memory
CRL	Cecil Renaud Library
C-TAM-TPB	Combined model of TAM and TPB
EIFL.NET	Electronic Information for Libraries Network
EIRS	Electronic information resources
HINARI	Health Internetwork Access to Research Initiative
HOL	Hezekiah Oluwasanmi Library
ICT	Information communication technology
IT	Information technology
IDT	Innovation diffusion theory
IIT	Indian Institute of Technology
INASP	International Network for the Availability of Scientific Publication
IPS	Information problem solving
JNU	Jawaharlal Nehru University
JMI	Jamia Millia Islamia
KU	Kenyatta University
KLISC	Kenya Library and Information Services Consortium
MM	Motivational Model
MPCU	Model of PC utilization
SCT	Social cognitive theory (SCT)
MSc	Master of science degree
MOUAU	Micheal Okpara University of Agriculture
n.d.	No date
n.p.	No page number
n.n.	No name
NUC	National Universities Commission
NULIB	Nigerian Universities Libraries
OARE	Online Access to Research in Environment
OAU	Obafemi Awolowo University
OPAC	Online Public Access Catalogue
PERI	Program for the Enrichment of Research Information
PEOU	Perceived ease of use
PhD	Doctor of Philosophy
PU	Perceived usefulness
RQ	Research Question
RSUST	Rivers State University of Science and Technology
SCT	Social Cognitive Theory

SPSS	Statistical Package for Social Sciences
TAM3	Technology Acceptance Model 3
TAMU	Texas A and M university
TPB	Theory of planned behavior
TRA	Theory of reasoned action
UEAB	University of Eastern Africa, Baraton
UTAUT	Unified theory of acceptance and use of technology
UKZN	University of KwaZulu-Natal
UK	United Kingdom
USA	United State of America
UNIPORT	University of Port Harcourt

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Context of study

There have been tremendous changes in the information world characterized by the increasing shift from printed information resources to electronic information resources. These changes have been brought about by advancements in information and communication technologies (ICT) resulting in accelerated production, processing, repackaging, dissemination and access to information. Electronic information resource (EIRs), sometimes referred to as electronic resources, are the electronic formats of information resources. Tsakonas and Papatheodotou (2006) define EIRs as information resources that are produced and provided in electronic form. These include CD-ROM and resources available on the internet such as electronic journals, electronic books and other computer based electronic media. A more comprehensive definition of EIRs is that given by Johnson, Ole, Julia, Glenda, Lynn and Nadia (2012) as those information materials that can be accessed through the use of a computer, or any handheld device either remotely through the internet or locally. Some EIRs commonly available include electronic journal, electronic books, full-text databases, indexing and abstracting databases, reference databases, numerical and statistical databases, electronic images and electronic audio and visual resources.

EIRs now enable researchers all over the world to get access to global information resources, particularly through the internet, for their scholarly activities (Vasappa and Shivalinggaiah, 2009; UCL, 2008). This is as a result of increased awareness among faculty and students about the ease of access of EIRs (Oduwole, 2004). Libraries are therefore expected to change from print or to provide, concurrently, both print and EIRs in order to meet the needs and interests of users. Consequently, the academic libraries in the University environment are striving to provide electronic information resources (Oduwole and Akpati, 2003) in order to meet the diverse and complex information needs of the users. As access to and use of EIRs increases, Peiris and Peiris (2012) have noted, while the university libraries in developed countries have all types of electronic information resources such as online journals and databases which are used by majority of university students, the situation is different in developing countries. Okiki and Asiru (2011) point out that the pressure on universities and academic libraries especially in developing countries to

source, acquire, repackage, and disseminate electronic information is mounting against severe budgetary constraints (Howard University Libraries, 2008). The reason is not farfetched. Information remains the bedrock of solid education. The access to wide range of information according to Hoq (2012) is vital to achieving an efficient research process. The academic library is established specifically to provide information resources to support academic and research activities of higher institutions. They are meant to provide information to support the institution in achieving her primary assignments of teaching, learning and research. As the information managers of tertiary institutions, they remain the best place for members of a tertiary institution to get unlimited access to information resources needed for academic and research activities.

The need for universities to prepare students for the information age cannot be over-emphasized. Increasingly, society expects tertiary institutions and universities in particular to train and produce individuals that are able to function in the global information society. This, according to Igun (2005), is essentially a knowledge society characterized by skills and competencies in information technology and information processing. For this to happen, Mutula (2011) argues that excellent library facilities and ICT infrastructure are of paramount importance.

This study aims to compare use of EIRs by doctoral students UKZN in South Africa and OAU in Nigeria respectively in order to gain an understanding of the factors that influence their use and non-use of the electronic resources. The purpose of comparative studies is to borrow advice, evaluate, find out and describe practices from other culture(s), group(s) or nation(s) as the case may be. Comparative studies usually involve the review of multiple cases often with the view of developing typologies or identifying effective practices (Evans, Martina, Bettina, Sursax by and Peter, 1999). Goodrick (2014) describes comparative case study as involving the synthesis and analysis of the similarities, differences and patterns across two or more cases that share a common focus or goal. It covers two or more cases in a way that produces more generalizable knowledge about causal questions-such as how and why particular programs or policies fail to work. It emphasizes comparison within and across contexts. The purpose is to understand and explain how features within the contexts influence the success of program or policy initiatives. This information is valuable in tailoring interventions to support the achievements of intended outcome. In the light of the above the purpose of comparing the extent of EIRs usage by doctoral students of OAU, Nigeria and UKZN, South Africa is to gain an understanding of the cause(s) of underutilization of

EIRs among the PhD students from the perspectives of their differences and similarities in their pattern and extent of EIRs use. As discussed elsewhere, South Africa and Nigeria share certain common profiles as are their universities of KwaZulu Natal and OAU respectively. The outcome is expected to inform the decisions and interventions to promote EIRs use among PhD students in the two universities.

## **1.2 Institutional Background: University of KwaZulu-Natal (UKZN) and Obafemi Awolowo University (OAU)**

### **1.2.1 University of KwaZulu-Natal (UKZN)**

The University of KwaZulu-Natal was established in 1910. It acquired its present name in 2004 following the merger of the University of Durban-Westville and the University of Natal. The university has five campuses, namely Pietermaritzburg, Howard College, Nelson Mandela, Edgewood and Westville campuses. The university has 4 colleges (Agriculture, Engineering and Science, Health Sciences, Humanities as well as Law and Management Studies) and 19 schools which offer undergraduate, honors, masters and PhD programs. It has about 43,000 students enrolled in both undergraduate and postgraduate programs (Cybermetrics Lab, 2013). The College of Humanities where this study is located has 6 schools – Religion, Philosophy and Classics, Arts, Applied Human Sciences, the Built Environment and Development Studies, Education and Social Sciences. The College of Humanities presently has about 772 postgraduate students of which 380 are in the School of Social Sciences.

UKZN has five libraries situated in the five campuses as well as four branch libraries. The Cecil Renaud Library (CRL) in the main campus is the main library of the Pietermaritzburg campus. The library provides a variety of print and electronic information resources to support teaching, learning and research and currently has 292,374 volumes of books, 2,597 collections of periodical titles as well as a wide range of rear books. (UKZN Library Review, 2016). The library is fully automated with 20 computers for patrons to access the electronic information resources. In addition the library has a wireless internet connection that allows access to its electronic information resources from anywhere within the campus (UKZN Library Annual Review, 2012).

### **1.2.2 Obafemi Awolowo University (OAU)**

Obafemi Awolowo University (OAU) was founded in 1962 as the University of Ife and was renamed Obafemi Awolowo University in 1987 after Chief Obafemi Awolowo, the first premier of the defunct Western Region of Nigeria. OAU is situated in Ile-Ife, Osun State, southwest of Nigeria. It has one campus, 13 faculties and 2 colleges. These are the faculties of Administration, Agriculture, Arts, Education, Environmental Design and Management, Basic Medical Sciences, Clinical Sciences, Dentistry, Law, Pharmacy, Sciences, Technology and Social Sciences. The university has a Postgraduate College and a College of Medicine. The university which started with only one postgraduate program (Pharmacy) now has 2,500 postgraduate students (out of its 30,000 student population) in 85 departments. The university offers postgraduate diplomas, masters and PhD programs at postgraduate level. The Faculty of Social Sciences comprises the departments of Economics, Geography, Political Science, Psychology, Politics, Philosophy and Economics, Sociology, Demography and Social Statistics as well as Anthropology (OAU Handbook 2013). OAU operates a centralized library system with departmental libraries that several members of the university community. The main university library, named after its second vice-chancellor, Hezekiah Oluwasanmi, has about 650, 000 volumes covering various disciplines and research areas and subscribes to over 5,000 print journals. It has a seating capacity of 2,500. In 2008, the Hezekiah Oluwasanmi Library benefitted from the Carnegie Corporation of New York funding project and was able to automate about 80% of her library operations and install virtual library management software. It has a functioning web-based online public catalogue (OPAC) through which her collections can be accessed. (OAU Handbook 2013)

OAU and UKZN are both top-ranked universities by the Webometrics Ranking of World Universities in Nigeria and South Africa. While UKZN is ranked first in Africa by Webometrics, OAU is ranked 8<sup>th</sup> (Cybermetrics Lab, 2013). PhD programs at OAU are offered in Political Science, Economics, Sociology and Anthropology, Psychology, Geography, Demography and Statistics (OAU Handbook 2013). UKZN, for its part, offers PhD programs in Political Science, Sociology, Anthropology, Information Studies, Economic History, Public Policy, Cultural and Heritage Tourism Management (UKZN, Faculty of Humanities Handbook, 2013). The libraries in both universities are equipped with modern ICT infrastructure to enable patrons access EIRs. UKZN was ranked first in South Africa and OAU similarly ranked first in Nigeria. Both universities are comparable in size and offer a wide range of academic programs that are similar.

### **1.3 Statement of the problem**

Despite the increasing adoption of EIRs around the world, studies continue to report gross underutilization of EIRs within university communities especially among postgraduate students in developing countries. In a survey on the awareness and use of EIRs among faculty members in three Indian institutions, Ahmad and Panda (2013), demonstrate that there is a lack of knowledge and use of electronic resources provided by the university libraries. Adigun, Zakari and Andrew (2010), in a similar study among faculty members and postgraduate students in Ahmadu Bello University Zaria, Nigeria revealed that print information resources were used more than electronic resources despite the fact that electronic information resources were available in the university library. Blignaut and Christo's study (2010) reveal that majority of South African postgraduate students lacked basic computer literacy skills needed for electronic information resources search and use. Aina, Adigun, Taiwo and Ogundipe (2010) have also found that users who are not familiar with the routines of EIRs will become anxious, frustrated and avoid such resources. The researcher, who is a librarian, comes across students on daily basis who spend more time on social networks than on the electronic information resources that can support their learning and research. The underutilization of EIRs by doctoral students and academic staff in universities in Nigeria and South Africa is therefore real (Naidoo and Jaya, 2011; Nweze, 2010). Park, Raul, Seungyoon and Jae (2009) believe that lack of research into the user side of the adoption of information systems is partly responsible for their underutilization in developing countries.

Despite their apparent benefits, there are also difficulties in the use of EIRs by patrons of academic libraries (Wu and Yeh, 2012). Korobili, Aphrodite and Sofia (2011) found that graduate (including doctoral) students at the Aristotle University of Thessaloniki lacked adequate information literacy skills to make maximum use of EIRs. Perrett (2004) also reports that doctoral students at the Australian National University (ANU) lack the requisite computer literacy skills and this affects their use of EIRs in their research activities. Similarly, Griffiths and Brophy (2005) report that doctoral students say they get confused while using EIRs because they have difficulty understanding subject categories and the hierarchical organization of electronic library resources. There are similar findings for doctoral students in Nigeria (Okite-Amughoru, Makgahlela and Solomon, 2014) and graduate students in Botswana (Fidzani, 1998) and South Africa (Blignaut and Christo, 2010). Studies also revealed lack of awareness and inadequate facilities as major

hindrances to PhD students' use of EIRs in Nigeria (Fabunmi and Asubiojo, 2013; Oyedapo and Ojo, 2013).

This study is motivated by the underutilization of e-resources by doctoral students in the two universities against the rising cost of e-resources and high investments in these resources by the respective universities (Kuhn 2015, Darries, 2004). The intense nature of doctoral research requires that student make use of information in all formats including electronic resources. The cost of acquiring EIRs is continually rising against decreasing budgets, yet it has been found that these resources have been underutilized especially among doctoral students (Kuhn 2015, Darries, 2004) who are some of the key knowledge producers of the evolving knowledge economy. This study therefore aims to investigate the extent of use of EIRs by doctoral students in the social sciences at the University of KwaZulu Natal (South Africa) and the Obafemi Awolowo University (OAU) in Nigeria respectively.

#### **1.4 Study assumption**

Obafemi Awolowo University, Nigeria and the University of KwaZulu-Natal, South Africa are both considered to be among the leading universities in their respective countries (Nigeria and South Africa). It was also assumed that doctoral students are a unique group of academic library users since they engage in more advanced and specialized research activities. Electronic information resources (EIRs) are underutilized by doctoral students in OAU and UKZN due to inadequate support from their respective academic library staff members.

#### **1.5 Objectives of the study**

The main objective of this study was to investigate the extent of use of electronic information resources by doctoral students at the University of KwaZulu-Natal in South Africa and Obafemi Awolowo University in Nigeria respectively. The study had two main objectives:

1. To investigate the extent of use of EIRs by doctoral students in the social sciences at OAU and UKZN respectively;
2. To determine factors influencing the use of EIRs by doctoral students.

The study also addresses the following broader issues around the research problem:

1. The skills requirements for using EIRs;

2. Information behavior of doctoral students in the electronic age;
3. Attitudes towards using EIRs by doctoral students.

## **1.6 Research questions**

This major research question of the study was: What is the extent of use of electronic information resources by doctoral students at the University of KwaZulu-Natal in South Africa and Obafemi Awolowo University in Nigeria respectively?

The following specific research questions were investigated:

1. To what extent do doctoral students of UKZN and OAU use EIRs?
2. Which are the EIRs most preferred by doctoral students?
3. How have EIRs affected the research work of doctoral students in both universities?
4. What factors influence the use of EIRs by doctoral students?
5. What competencies do doctoral students in both universities have to use EIRs and how did they acquire these skills?

## **1.7 Significance of the study**

Inquiry into levels of use has always been of importance to librarians and information providers in general (Vessozi, 2008). This has always been used in collection development policies in libraries, especially in the face of dwindling budget allocations. The assessment of EIR usage is useful in the provision of EIRs that are focused on end-users. One envisaged outcome of this study is that it will shed light on areas where users need assistance in accessing EIRs that will assist library staff to support users adequately. The study outcomes may assist in benchmarking as the two universities are ranked among the leading universities in Africa in the Webometrics ranking of universities. This study will contribute, not only to the EIR acquisition policies of academic librarians, but also all library personnel as well as the entire university community whether they are information technology providers or policy makers.

The importance of access to EIRs by academic libraries is underscored by the academic global ranking of universities (Cybermetrics Lab. 2013). Though most African universities are not competitively ranked in the academic global ranking of universities, OAU and UKZN were ranked

among the first five universities in Nigeria and South Africa (Cybermetrics Lab. 2013). Given that the quality of library resources is one of the criteria for such rankings, this study aims to compare the extent of EIR use by doctoral students in these two universities. A study of comparable universities is important to generate a model of EIR resource deployment and management. The outcome of this study is expected to bring an improvement in the provision of EIRs and services by universities in Nigeria and South Africa.

Studying the extent of EIR usage will reveal the causes of their underutilization among doctoral students. In addition, the study will provide information for decision making on the competencies required for the use of EIRs by doctoral students. Thus, the study will provide a basis for proffering solutions to the problem of underutilization of EIRs. Furthermore, the results of the study will be useful to the management of academic libraries in particular and universities in general in terms of their ability to address the needs of doctoral students more effectively addressed. Finally, the study's outcome will contribute to the ongoing debate on the need to develop ICT infrastructures in higher institutions across Africa.

### **1.8 Delimitation of study**

The study is limited to investigating the extent of EIR use among doctoral students registered in social science departments in the University of KwaZulu-Natal, South Africa and the Obafemi Awolowo University, Nigeria. The PhD programs in both universities are largely offered by research compared to other postgraduate programs which have coursework components. The study also involves subject librarians at UKZN libraries and information technology staff at the OAU library because of their role in providing information services in general and electronic information services in particular. The study is limited to social science disciplines which have comparable program in both universities.

### **1.9 Theoretical perspectives**

This study is underpinned by the latest version of the Technology Acceptance Model (TAM 3) developed by Venkatesh and Bala (2008). The technology acceptance model has undergone several reformations and has been empirically proven to be successful in providing explanations for the use and non-use of various forms of information technology systems (Aggorowati, Nur, Suhartono and Hasyim, 2012; Tang and Chen, 2011). TAM 3 extends the study of technology

acceptance by positing that experience can moderate the relationships between perceived ease of use and perceived usefulness, computer anxiety and perceived ease of use, as well as perceived ease of use and behavioral intention. The major contribution of TAM 3 to this study is its ability to predict and explain the reasons for the use and non-use of information technology based on users' experience of organizational interventions. Several other theories have been used by similar studies to explain the use and non-use of information technologies. These include the theory of reasoned action (TRA), theory of planned behavior (TPB), innovation diffusion theory (IDT) as well as the unified theory of acceptance and use of technology (UTAUT). The choice of TAM 3 for this study is based on the fact that it is a product of a synthesis of prior studies on TAM (Algahtani n.d.). In TAM 3, Venkatesh and Bala (2008) offer a complete network of the determinants of individual information technology (IT) adoption and use" while also providing for intervention that potentially leads to greater acceptance of IT. A detailed exploration of the theoretical framework of the study is given in chapter 2.

### **1.10 Preliminary literature review**

The empirical and theoretical literature review carried out for this study were sourced mainly from books, journals, doctoral and masters theses and other sources within the context of the subject of the study locally (Africa) and internationally (outside Africa). The literature review particularly gave preference to previous studies carried out in similar topic within the context of tertiary institutions especially universities. This is because the present study was carried out with two university communities. This enabled the researcher to view the topic under study from a global perspective thereby indentifying gaps that the present study has attempted to fill because a broader picture of the topic and research problem was revealed. Chapter three presents a comprehensive review of related literatures carried out for this study. The literature review in chapter three is organized under twelve sections and covered major themes from research questions, objectives and broader issues drawn from the research problems.

A study by Kelly and Orr (2003) on trends in the use of EIRs by distance-learning students in the United States reveals that respondents' usage patterns had changed dramatically in favor of electronic resources particularly the internet. This is due to the perception that the use of EIRs saved time, eliminated problems of geographical barriers and was more economical. Waldman (2003) investigated freshmen's use of library electronic resources and self-efficacy at the library

of Breach College, New York and revealed that respondents felt that EIRs had positive effects on their research. Ellis and Oldman (2005) carried out a survey to assess the extent of accessibility and utilization of internet resources in the humanities in UK universities. The results revealed extensive awareness and use of the internet to access e-resources for research and academic purposes. Their study revealed further that scholars in the humanities relied on EIRs for their research. Similarly, Tahir, Khalid and Farzana, (2008) investigated the use of EIRs and facilities by academic and research scholars in the humanities at the University of Punjab, Pakistan and found that respondents still made more use of print resources but showed significant interest in electronic resources. Swain and Panda's (2009) study of a business school library in Indian reported a high level of the use of EIRs for academic and research purposes due to quick access to information and ease of information retrieval. Renwick (2005) investigated the awareness and use of electronic information resources by medical sciences faculty at the University of the West Indies and revealed that 97% of the respondents made use of electronic information resources for academic and research purposes. Kaur and Verma (2009) reported an increase in the use of electronic journals in a survey of users in the Indian Institute of Technology, Delhi. This increase was attributed to enhanced awareness of the benefits of e-journals to academic and research work. Similarly, Bansode and Pujar (2008) conducted a survey among science and social science scholars at Shivaji University, Kolapur and discovered that of the 122 respondents 97 (79.50%) of the total population made daily use of the internet to access information for educational purposes which they agreed had impacted positively on their educational output.

Similar studies carried out in different institutions in Africa include those of Ajayi and Akinniyi (2009) who found that the internet helped users to manage the flood of information they were being exposed to. Okello-Obura and Ikoja-Odongo's (2010) study of the electronic information seeking behavior among library and information studies postgraduate students at Makerere University, Uganda, discovered that the majority of respondents made use of EIRs but did not possess enough skills for their maximum use. Similar findings were arrived at by Namaganda and Patrick (2013) who investigated the perceptions of users of the Makerere University library. They found that users were satisfied with the available resources but needed computer and technological training and support to access EIRs effectively. For their part, Ingutia-Oyieke and Archie (2010) compared the use of electronic resources by undergraduate students at two different Kenyan

universities and revealed that there was increased awareness of EIRs although the rate of use was generally low.

This preliminary literature review reveals both increased use and low use of EIRs among different groups of respondents selected from university communities in different countries and provides a fitting backdrop to the present study which contributes to the growing scholarship on levels of EIR in two important universities in Africa.

### **1.11 Research methods**

Chapter four of the study provides a comprehensive report of the study's methodological approaches and processes including a description and justification for the research paradigm, methods and design. The study employed the post-positivist research paradigm and used the mixed method approach for the collection of data. The use of both quantitative and qualitative data provided for a more comprehensive understanding of the research problems. Quantitative data were collected through survey questionnaires and semi-structured interviews.

The study is descriptive and its population comprised the entire social science doctoral students and library staff from the two selected universities owing to their small size. The research instruments focused on use of electronic information resources and were pre-tested to ensure their reliability.

The Statistical Packages for Social Sciences (SPSS) software was used to analyze quantitative data while qualitative data collected was analyzed by content analysis. The quantitative data was presented in tabular form while the qualitative data was transcribed and presented thematically.

### **1.12 Ethical considerations**

Permission was sought from the authorities in the selected institutions before the research instruments were administered. The ethical codes of the universities were strictly complied with and informed consent was obtained from respondents before their participation. They were assured that they were not under any obligation to fill in the questionnaires or to participate in the interviews and that they were free to withdraw at any point if they so wished. Respondents were assured that the data collected would be used only for the purpose of research and that their identities would not be revealed.

## **1.13 Structure of the thesis**

### **Chapter 1: Introduction**

This chapter discusses the context and objectives of the study, its rationale, research problem, research questions and delimitations. This chapter also presents a brief synopsis of the study's theoretical framework, a preliminary literature review and a summary of its methodology.

### **Chapter 2: Theoretical framework**

This chapter discusses the theoretical model on which the study is based. It also discusses other models that have been used in similar studies.

### **Chapter 3: Literature review**

Chapter three provides a comprehensive review of existing literature based on the study's research questions and the broader issues around the research problem. Gaps in literature were identified and the ways in which these are addressed by the present study are discussed.

### **Chapter 4: Research methodology**

This chapter presents the study's research methodology. It provides details of the research paradigm, research approach, research design, study population, sampling procedure, data collection, validity and reliability as well as data analysis methods and ethical considerations.

### **Chapter 5: Data analysis and presentation of findings**

Chapter five contains the analysis and presentation of results.

### **Chapter 6: Discussion of results**

This chapter discusses and interprets the study findings in the context of the existing literature and the study's theoretical framework.

### **Chapter 7: Summary, conclusions and recommendations**

The study concludes with a detailed summary of findings, conclusion and recommendations. The originality and contribution of the study to existing knowledge as well as recommendations for further study are outlined in this chapter.

## **1.14 Summary**

Chapter one has provided an introduction to the study by discussing the context of the research, the research problem, purpose, objectives and research questions. The chapter has also outlined the theoretical model underpinning the study, the methodology a preliminary literature review and an outline of the structure of the thesis. The chapter to follow discusses the study's theoretical framework of the study.

## CHAPTER 2

### THEORETICAL FRAMEWORK

#### 2.1 Introduction

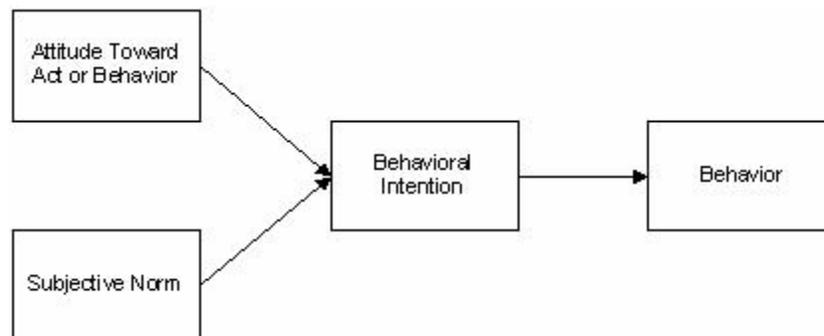
Research writing entails the development of thoughts and generation of questions that the researcher seeks to answer through the findings of his research. However, most researches are guided by existing thoughts or beliefs already developed by other researchers. These thoughts that are further developed into theories are grouped together to frame the premise on which the research is grounded or built; this is what is known as a theoretical framework. Theoretical framework is a foundation for the parameters or boundaries of a study through which researchers can seek answers to the topical questions they have developed on broad subjects. A theoretical framework can also be seen as a collection of interrelated concepts, like a theory but not necessarily well worked-out, that guides the a research, determining what things to measure and what statistical relationships to look for in the research (Borgatti, 1996). Neuman (2011) asserts that a theoretical framework provides and describes assumptions, concepts, and forms of explanations. Pickard (2013) also point out that theoretical framework covers the theories, concepts and issues which surround a research topic. They argue that a theoretical framework helps the researcher make connections among variables and see the broader significance of findings and gives directions to important questions and suggests ways for a researcher to make sense of data. Without theoretical framework, Kumar (2005) explains it will be difficult to maintain focus during literature search to be included in literature review.

The purpose of this study is to investigate the extent of EIR use by doctoral students in the social sciences at the University of KwaZulu-Natal, South Africa and Obafemi Awolowo University, Nigeria and to unravel the predictors of their use with a view to discovering the causes of underutilization. Although the Technology Acceptance Model (TAM 3) is the dominant theoretical basis for this study, this discussion also explores the Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB) and the Unified Theory of Acceptance and use of Technology (UTUAT).

## 2.2 Theory of Reasoned Action (TRA)

Propounded by Fishbein and Ajzen (1975), this theory posits that the strongest or most proximal predictor of volitional behavior is one's behavior intention. It is based on the belief that behavioral intentions are the result of both an individual's influence and the normative influence (Hale, Brian and Kathryn, 2002). The purposes of TRA are to predict and understand motivational influences on actual behavior that is not under the individual's volitional control; identify how and where to target strategies for changing actual behavior; and to explain the reason behind any human behavior (Tao, 2008) such as the use of EIRs.

**Figure 2.1 Diagram of TRA**



**Source: Fishbein & Ajzen (1975)**

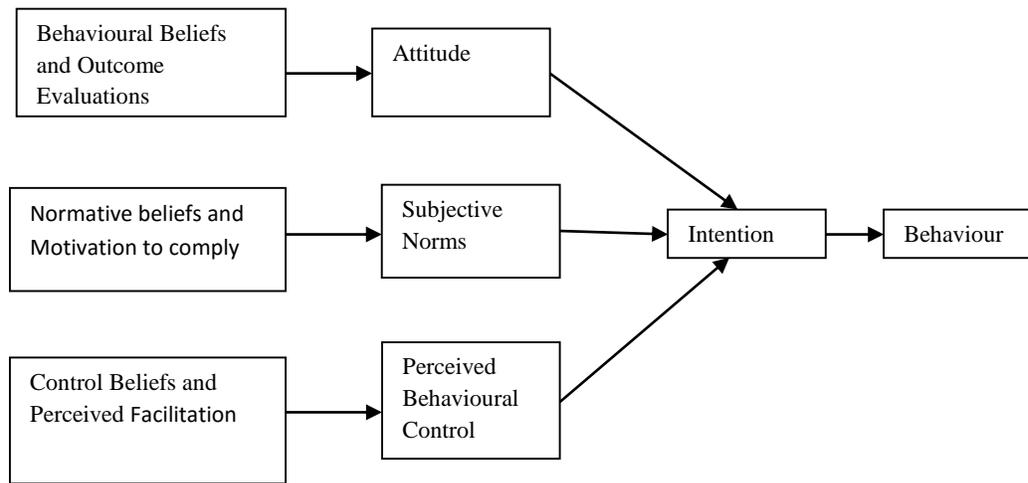
The underlying constructs of the TRA are behavioral beliefs, normative beliefs, attitude, subject norm and intention. The TRA is based on the belief that individuals are capable of making rational decisions by constantly evaluating and calculating the relevance of their behavioral beliefs while forming attitudes towards their behavior. In effect, individuals form attitudes towards behaviors by evaluating their beliefs in the sense espoused by the expectancy value model. Simply put individuals' form their attitudes (such as decision to make use an information technology) based on their beliefs about the consequences of a particular behavior and their evaluation of those beliefs (Botha and Kris, 2005). The strength of TRA lies in its ability to describe the drivers of an individual's behavior and it provides a general framework to understand behavior that influences attitude formation in a voluntary situation (Sharma and Jyoti, 2013, Ducey, 2013). It is suitable for a situation where an individual is not under any obligation to behave in a particular way. The concepts identified in TRA are used to explain and gain a better understanding of the factors that

influence an individual decision to form an attitude. Ajzen (1991) explains that an individual's beliefs influence his/her attitude towards various situations adding that the individual's attitude joins with subjective norms to shape the behavior intentions of every individual. TRA according to Botha and Kris (2005) lacks the ability to describe and explain how an individual makes the decision to adopt or reject an innovation because TRA only describes the drivers of an individual's behavior. Invariably, it may not help to sufficiently give a satisfactory understanding of the explanation behind doctoral students use and non use of EIRs because it cannot give a clear description of how the decision to use or not to use EIRs is reached. A person may change his/her behavior before changing his/her beliefs. For instance a student may have to use EIRs for him/her to form a positive or negative attitude towards it. Ducey (2013) also criticised TRA for its inability to specify the specific beliefs that will be important in the context of IT adoption.

### **2.3 Theory of Planned Behavior (TPB)**

This theory was developed by Ajzen (1985) to expand the explanatory domain of TRA (Tao, 2008). According to the author, (Ajzen, 1985), TPB incorporated components of TRA but introduced perceived behavioral control as a predictor of behavioral intentions and behaviors. Perceived behavioral control is posited to be a function of control beliefs and perceived power. Control belief has to do with the presence or absence of the resources and opportunities required to perform the behavior. Perceived power on the other hand is the ability of the control attributes (such as skills, resources and other requirements) to facilitate or inhibit the performance of the behavior. In the context of information systems research, Taylor and Todd (1995) defined perceived behavioral control as the perceptions of internal and external constraints on behavior (which includes skills, resources and things needed to perform a particular behavior).

**Figure 2.2 Diagram of Theory of Planned Behavior**



**Source: Chuttur (2009)**

### **The strengths and weaknesses of TPB**

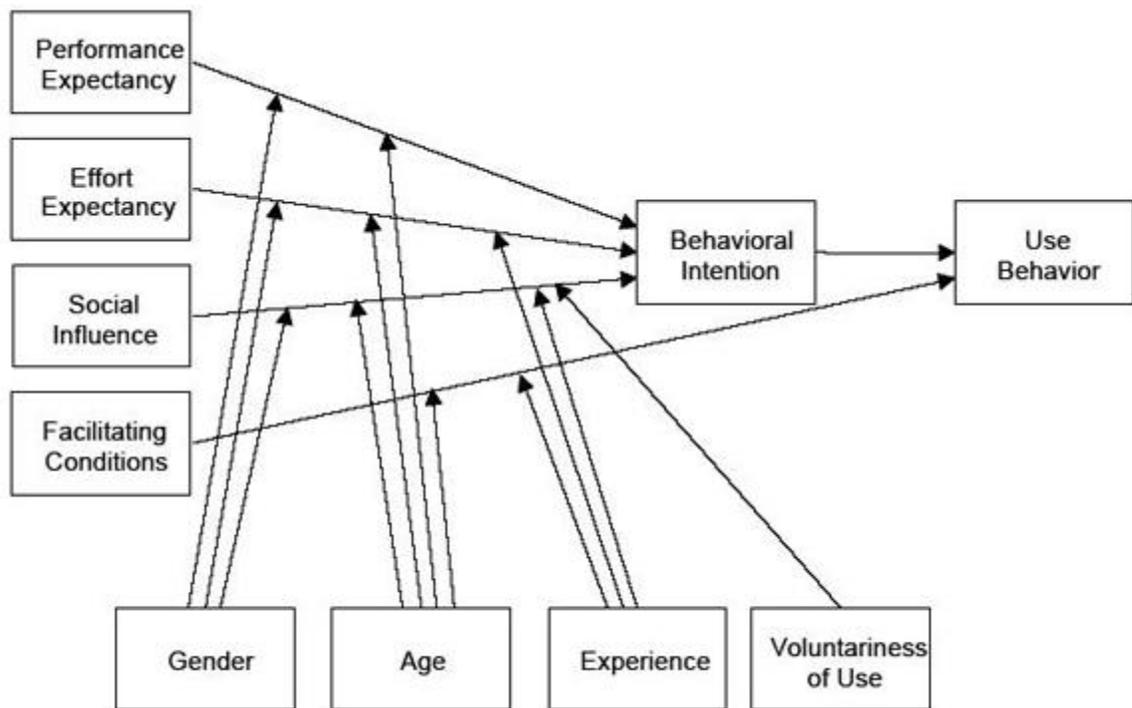
TPB has been considered as a general behavior model which has been used to study and predict the intention to use information systems (Taylor and Todd, 1995; Mathieson, 1991). There are strong empirical evidences that TPB has a better understanding of the complex patterns of the relationship among the antecedents (such as beliefs and attitude) of behavioral intention (Premkumar and Anol, 2006) compared to other acceptance models. This is because TPB being a more complex model has several independent variables that can capture various aspects of a person's belief (Chuttur, 2009). A major weakness found in TPB is its inability to lend itself to measurement which has prevented it from being sufficiently tested empirically. The TPB variable of perceived behavioral control (PBC) lacks standard definition making its comparison from other studies irrelevant (Godin and Kok, 1996). Compared to other acceptance models, TPB lacks sufficient explanation for the formation of attitudes towards information technology use (Methieson, 1991) which is what makes it unsuitable for the present study.

### **2.4 Unified Theory of Acceptance and Use of Technology (UTAUT)**

This theory is an expansion of the TAM and it integrates the elements of eight theories to predict and explain the reason behind the adoption and use of an information technology by an individual or organization. Venkatesh, Morris, Davis and Davis (2003) advocate the use of performance

expectancy, effort expectancy, social influence and facilitating conditions to predict users' adoption of information technology. According to the proponents of UTUAT, performance expectancy, which draws its root from five theories (TAM, TAM and TPB, Motivational Model [MM], IDT and Social Cognitive Theory [CST]) can be defined as the degree to which an individual expects that using a system will help him/her attain gains in job performance. Effort expectancy is defined as the degree of ease associated with the use of the new system while social influence has to do with the degree to which an individual perceives that other important persons (such as boss and colleagues) believe that he/she should use the new system. Facilitating conditions are understood as the degree to which an individual believes the organization provides support for his/her use of the system in terms of working materials such as computer hardware and software. The theory also recognizes the variables of gender, age, experience and voluntariness that are assumed to mediate the impact of the four core constructs on usage intention and behavior (Venkatesh, Morris, Davis and Davis, 2003). The main crux of UTUAT is that actual use occurs as a result of the moderating effects of age, gender, experience and voluntariness on performance expectancy, effort expectancy and social influence, or simply put the moderating variables have effect on the strength of the relationship that exists between constructs and behavioral intention. With the application of UTUAT Venkatesh, Morris, Davis and Davis (2003) were able to demonstrate that certain relationships are affected by the moderating factors of gender, age, experience and voluntariness with behavioral intention bringing about acceptance or use of technology.

**Figure 2.3 Diagram of unified theory of acceptance and use of technology (UTAUT)**



**Source: Venkatesh, Morris, Davis and Davis (2003)**

### **The strengths and weaknesses of UTUAT**

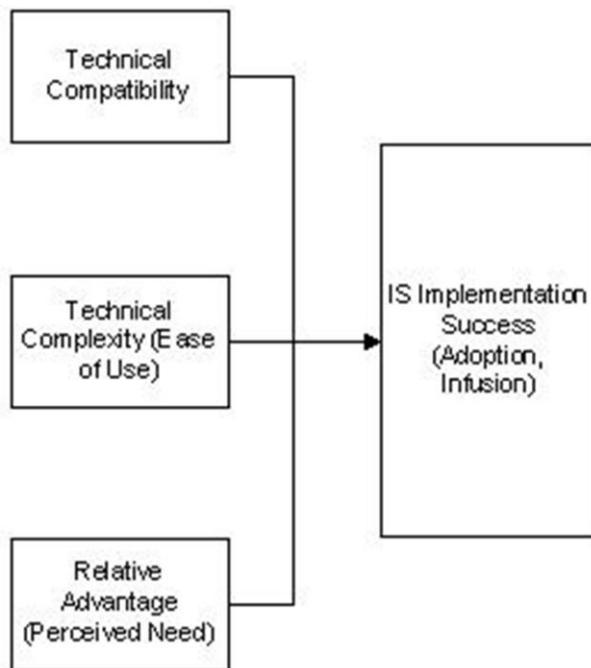
The robustness of this is theory id due to the other eight prominent theoretical models in the study of technology acceptance and use that it is based on. These are TRA, TPB, TAM, IDT (Innovation Diffusion Theory), MM (Motivation Model, a combined model of TAM and TPB (C-TAM-TPB), MPCU (Model of PC Utilization) and SCT (Social Cognitive Theory). The UTUAT is thus considered a robust model empirically tested to provide explanations for increasing variances in terms of technology use (Holden and Ben-Tzion, 2010; Oye, Noorminshah and NorZairah, 2011). However, Polancic, Marjan and Ivan (2009), have criticized UTUAT on the grounds that its validity and robustness has not been tested in enough studies. According to Verdegem and De Marez (2011), a critical overview of UTUAT raises the following questions: whether it provides accurate insights into both the adoption and use decision of end-users of new technologies; whether UTUAT is helpful in exploring the different profiles of users and non-users of new technologies

and lastly whether there is need to find out if the variables incorporated in the model are detailed enough to feed more accurate targeting approaches of potential adopter segments in a variety of environments as well as non-user. UTAUT may not be suitable for this study since it was originally developed to understand employee acceptance of technology in an organizational setting (Venkatesh, James and Xin, 2012).

## **2.5 Innovation Diffusion Theory (IDT)**

This theory is based on the assumption that innovation diffusion is achieved through users' acceptance and use of new ideas (Ziltman and Stiff, 1973). In regard to the adoption of innovation, Rogers and Moore (n.d.) identified five major factors as predictors of information technology use and adoption of a new innovation. These factors include relative advantage which means the extent to which an innovation offers improvements over currently or existing available tools; compatibility, which refers to the degree to which an innovation is considered as being consistent with the social practices and norms of its potential users and complexity, meaning the ease with which users learn to use the new innovation or how difficult it is to learn how to make use of it. Others are trialability, which is the degree to which an innovation may be tried or tested prior to its adoption; and observability, meaning the degree to which the outputs and gains of an innovation can be visible to people. Rogers (1995) explains that, when considered separately, each factors is not sufficient to explain and predict the extent and rate of innovation diffusion. However, it has been demonstrated that innovations having the five characteristics identified by IDT will diffuse more rapidly and extensively than those without those characteristics (Moore and Benbasat, 1991; Chang and Tung, 2008).

**Figure 2.4** Diagram of innovation diffusion theory (IDT)



**Sources: Agarwal and Prasad (1996), Cooper and Zmud (1990)**

### **The strengths and weaknesses of IDT**

This is one of the most widely used theories of acceptance. It specifically offers a conceptual framework for explaining the acceptance of an innovation at a global level and the context within which one may consider adopting an innovation over time (Dillon and Morris, 1996). Although with some modification, IDT has been applied in various instances of IT applications and has been found useful (Brancheau and Wetherbe, 1987; Agarwal and Prasad, 1997). The theory is criticized on the grounds that it is not exclusively concerned with information technology like TAM, and does not give an explicit explanation of users' acceptance of an innovation (Dillon and Morris, 1996) and is therefore not suitable for the present study.

## 2.6 The Technology Acceptance Model (TAM)

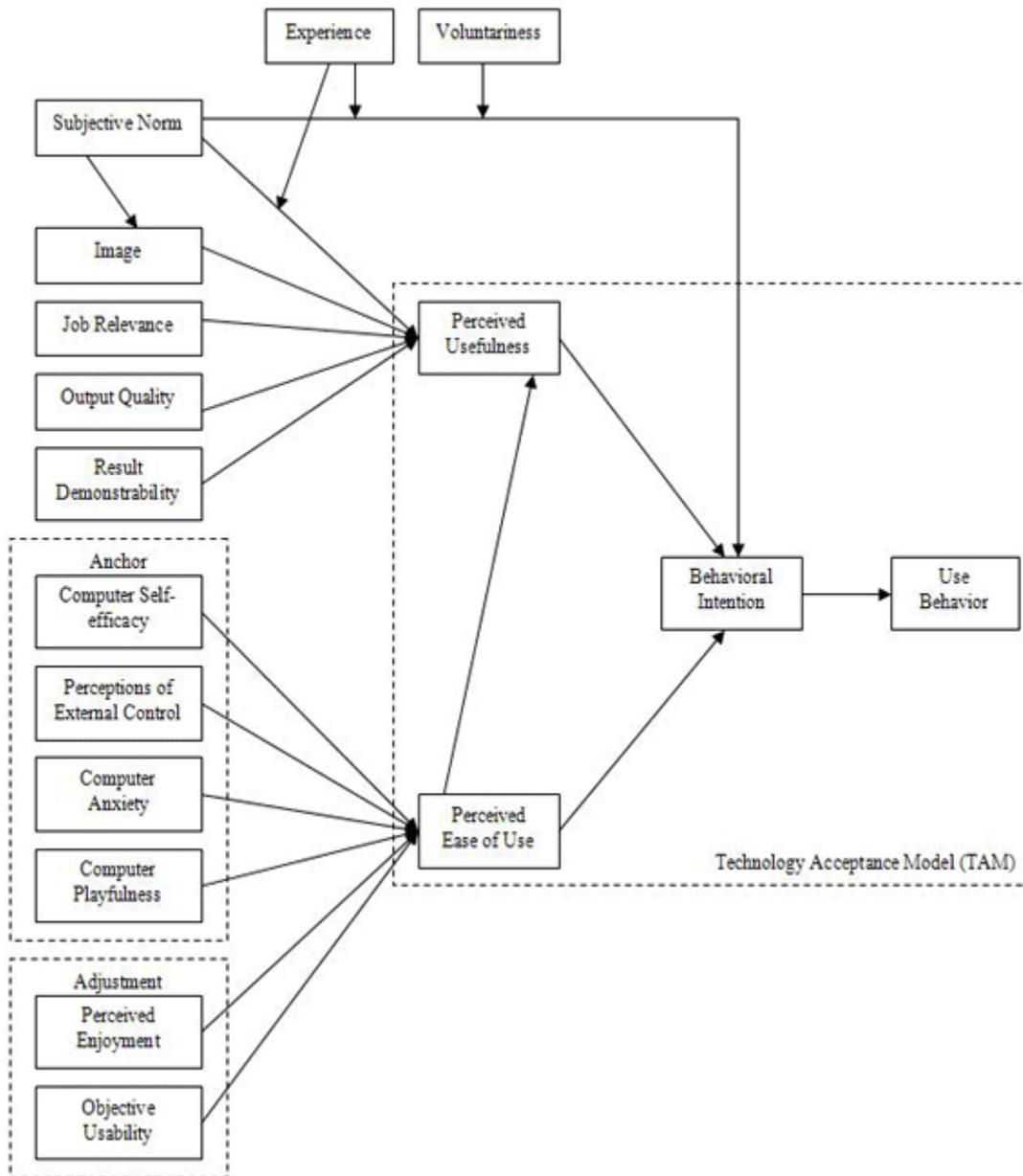
This model was proposed by F. D. Davis in 1989 to predict and explore the adoption and use of information technologies (IT) by users. The model theorizes that two major factors influence an individual's decision to adopt and use a new technology – perceived ease of use (PEOU), which is the degree to which an individual believes that using a particular technology would be free from effort, and perceived usefulness (PU), the degree to which an individual believes that using a particular technology would enhance his job performance (Venkatesh and Davis, 2000).

TAM is a causal model which is based on TRA. It suggests that actual system use is affected by behavioral intentions which are themselves affected by attitudes towards use (David and Detmar, 1997). TAM was modified by Venkatesh and Davis (2008) into TAM2 which incorporates two theoretical constructs, social influence processes (subjective norm, voluntariness and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability and perceived ease of use). Based on cognitive instrumental processes, TAM2 offers a detailed explanation of the processes involved when individuals form their perceptions of the usefulness of new innovations. The crux of the argument behind the cognitive instrumental processes is that perceived usefulness judgment is formed partly by cognitively comparing what a system is capable of doing with what is to be done with the system (Venkatesh and Davis, 2008). According to TAM2, perceived ease of use and result demonstrability are key elements in determining the usefulness of a system. While the interactive effects of job relevance and output quality on perceived usefulness will increase because as output quality increases the effect of job relevance will increase on perceived usefulness. TAM2 was intended to proffer better understanding of the factors that determine perceived usefulness with organizational assistance. With TAM2, Venkatesh and Davis (2000) were able to give a more detailed explanation for the reasons users found a given system useful (Chuttur, 2009; Metzger, Andrew and Lara, 2003; Donthu, 2006; Premkumar and Anol, 2006). A further expansion of TAM2 gave birth to TAM3 by Venkatesh and Bala (2008). TAM3 provides a framework of the determinants of a user's adoption and use of technology at an individual level. Venkatesh and Davis (2008) identified four major factors that determine perceived ease of use and perceived usefulness namely, individual differences, system characteristics, social influence and facilitating conditions. They define individual differences as those characteristics traits in a person that makes him/her unique (such as demographics,

personality, traits, age and gender), have influence on his/her perception of perceived ease of use and perceived usefulness of a system. System characteristics is seen as the special features that are possessed by a system that makes it either user friendly or difficult to use influence an individual's perception of a systems ease of use and usefulness. Social influence refers to the degree to which an individual perceives that important others believe he/she should use the system. Lastly, facilitating conditions have to do with the support given by organizations to facilitate systems use. Venkatesh and Bala (2008) developed TAM3 against the backdrop of the two main groups of antecedents of perceived ease of use from TAM2 namely, anchors (computer self-efficacy, perceptions of external controls, computer anxiety and computer playfulness) and adjustments (perceived enjoyment and objective usability). Anchors refer to general beliefs about systems and systems usage while adjustments refer to beliefs that are formed on direct experience with the particular system (Chuttur, 2009).

A major contribution introduced in TAM3 is the moderating effect of experience in the relationships between perceived ease of use and perceived usefulness; computer anxiety and perceived ease of use; and perceived ease of use and behavioral intention which was not highlighted in previous TAM models. TAM 3 posits that experience moderates the relationships between perceived ease of use and perceived usefulness, computer anxiety and perceived ease of use, perceived ease of use and behavioral intentions. The new construct introduced in TAM 3 is experience. This new relationship assumes that an individual's experience increases in the use of a system as he/she gains more information on how easy or difficult the system is to use. The effect of computer anxiety reduces on perceived ease of use as an individual's experience increases in the use of a system as he/she will have more accurate perception of the effort required to use the system. As an individual's experience increases in the use of a system, the effect of perceived ease of use will be reduced in forming the behavioral intention to use a system.

**Figure 2.5 Diagram of Technology Acceptance Model (TAM3)**



**Source: Venkatesh and Baba (2008)**

**Moderation of experience on the relationship between perceived ease of use and perceived usefulness**

Venkatesh and Bala (2008) argue that as a person gains more experience in the use of a particular system, he/she will also have more information on how easy and difficult the system is to operate. They also argue that, the fact that a system is easy or difficult to operate may not make a person

use or not use it, because over time, and based on information gained from experience, the user is able to make an assessment (perceived ease of use) of the likelihood of achieving the purpose (perceived usefulness) of using the system.

### **Moderation of experience on the relationship between computer anxiety and perceived ease of use**

TAM3 theorizes that experience will moderate the effect of computer anxiety such that with increasing experience, the effect of computer anxiety on perceived ease of use will lessen. In other words the general beliefs about computer (computer anxiety-apprehension and fear about computer use) can be controlled and eventually dismissed by gaining information about computer use through experience from actual use. With the effect of experience, “objective usability” and “perceived enjoyment” will become stronger determinants of perceived ease of use.

### **Moderation of experience on the relationship between perceived ease of use and behavioral intention**

TAM3 assumes that experience will influence a person’s perceived ease of use in forming behavioral intentions. In effect, once a person is able to overcome the initial hurdle of using a system, and as he gains hands-on experience over time, the effect of perceived ease of use on behavioral intention will diminished eventually. In the context of EIR use among postgraduate students, a student’s experience increases with the use (access and retrieval) of EIRs as he/she gains more information on how easy or difficult it is to access and retrieve information electronically. The effect of computer anxiety (apprehension or fear in case of a novice) reduces with the student’s perception of ease of use as his/her experience increases (gains or acquires more skills through constant use). This is due to the fact that he/she will have more accurate perception of the skills required to access and retrieve EIRs. As the student’s experience of using EIRs increases, the effect of perceived ease of use will be reduced in regard to the formation of the behavioral intention to use EIRs.

A significant feature of TAM3 is its emphasis on the unique roles and processes of perceived ease of use and perceived usefulness by postulating that the determinants of perceived usefulness will have no effect on perceived ease of use and vice versa. Moreover, individuals’ perceptions about

perceived ease of use are initially anchored on a general computer belief and later adjusted based on their personal experience with specific system.

TAM3 was adopted for this study due to the fact that it was designed specifically to explain the reason behind the use and non-use of information technology. One of the objectives of TAM3 is to develop a comprehensive nomological network (integrated model) of the determinants of IT adoption and use at individual level. This was expressed and achieved by integrating and building on the models of Venkatesh and Davis (2000) and Venkatesh (2000). TAM3 presents a comprehensive explanation to IT adoption, rejection and underutilization that is applicable to a variety of environments including university environment. TAM3 is therefore considered relevant in the context of this study (EIRs use and non use) because TAM3 is a theoretical cross-sectional model that predicts IT usage based on user perceptions at any point in time. Moreover, its comprehensiveness ensures all relevant factors necessary to a gain better understanding of EIR use are included in the theory, hence it is considered a preferred model for studying information technology usage.

TAM has been used by many researchers to explain the adoption of various forms of technologies including location based services. Venkatesh and Bala (2008) demonstrated in their study that TAM 3 is successful in predicting information systems use. They applied TAM 3 in four longitudinal studies and revealed that the model accounted for 52-67% of the variance in the perceptions of usefulness, 43-52% of the variance in the perceptions of ease of use and 40-53% of the variance in usage intentions. TAM 3 was used in a similar study by Lui, Chen, Sun, Wible and Kuo (2010) to explore the factors that affect the intention to use an online learning community. Al-Gahtani (n.d.) also used TAM 3 to investigate the adoption of e-learning across cultures. TAM 3 has been adopted to explain the reason behind the use and non-use of EIRs by doctoral students in the universities under survey. This study shall focus on the new relationships introduced by TAM3 namely, the moderating effects of experience on the relationships between perceived ease of use and perceived usefulness, computer anxiety and perceived ease of use and perceived ease of use and behavioral intention to investigate their impact on doctoral students' behavior towards EIRs use.

The major theoretical significance of TAM3 to the present study is fore grounded in its explanation of the moderating influence of experience on the relationships between perceived ease of use and

perceived usefulness, between computer anxiety and perceived ease of use, as well as between perceived ease of use and behavioral intention. These three relationships are significant to EIR use .

## **2.7 Gaps and summary**

There is abundant empirical evidence of the wide use and acceptance of TAM in the study of various forms of technology including information systems across different geographical settings and cultures, and across different disciplines and sectors. The earlier TAM models (TAM and TAM2) were applied in many of these studies and the dominant views of the theory are based on the results from these studies. The application of the latest version of TAM (TAM3) in the present study of doctoral students' use of EIRs seems to be one of the limited studies in which TAM3 has been applied. Moreover, pioneer test studies using TAM and TAM3 were carried out in North America and it has been established that there are discrepancies in the outcomes of the application of TAM in studies done in developing countries as against those done in developed countries (Straub, Keil and Brenner, 1997); Hofstede, 1980); Anandarajan, Igbaria and Anakwe, 2000). This is why Miller and Otto (2010) argue that TAM is not an appropriate model for developing countries. There is therefore the need for the application of TAM3 in studies based in developing countries such as the present study that focuses on the two leading economies in Africa.

## **2.8 Summary**

This chapter discussed various theoretical frameworks relevant to the study (TRA, TPB, UTUAT, IDT and TAM). This chapter also explores TAM3, the most recent version of the TAM as the preferred model for the present study given that it enables enhanced understanding of the conceptual issues relating to EIR in view of the fact that TAM focuses on individuals having control over their decision to use or not use a system (Pearlson and Saunders, 2006). More importantly, TAM3 is found to be particularly suited to this study's interest in the use of EIRs due to the moderating effect of experience in the relationships between perceived ease of use and perceived usefulness; computer anxiety and perceived ease of use; and perceived ease of use and behavioral intention.

## CHAPTER 3

### LITERATURE REVIEW

#### 3.1 Introduction

The purpose of literature review in research according to Hart (1998) is to facilitate theory development, close areas where surplus of research exists and also to discover fresh areas where innovative input is required. He also defined literature review as the use of ideas in the literature to justify the particular approach to the topic, the selection of method and demonstration that the research will contribute something new to the body of knowledge. In line with the purpose of this study which is to assess the extent of electronic information resources (EIRs) usage by doctoral students of South Africa and Nigeria with a view to unravel the cause of underutilization of EIRs; an overview of the general perception, availability and uptake of electronic information resources in higher education will be presented in the literature review.

This study sought to address the following major research question: what is the extent of use of electronic information resources by doctoral students at the University of KwaZulu-Natal in South Africa and Obafemi Awolowo University in Nigeria respectively? The specific research questions to be addressed by the study are as follows:

1. To what extent do doctoral students in both universities use EIRs?
2. Which are the most preferred EIRs by doctoral students?
3. How has EIRs affected the research work of doctoral students in both universities?
4. What are the factors that influence use of EIRs by doctoral students?
5. What competencies do doctoral students in both universities have to use EIRs and how did they acquire these skills?

Empirical and conceptual literature review in this chapter will be obtained from books, journals, theses, conference proceedings, and databases and so on. Kothari (2004) points out that there are two types of literature – the conceptual literature concerning the concepts and theories and the empirical literature which discusses studies related to the variables of the current study. This chapter is organized around the themes of the research questions and key variables of the underlying research problem. Thematic areas from the research questions include extent and

predictors of electronic information resource (EIR) usage, the EIR preferences of doctoral students, their effect on students' research, as well as the level of competencies required by the students to make effective use of EIRs. Others are the information behavior and attitudes of the students towards the use of EIRs. The key variables from the study's underlying theory, the Technology Acceptance Model (TAM 3) are experience, computer anxiety, perceived usefulness and perceived ease of use. The effect of the variable of experience on the relationships between perceived ease of use and perceived usefulness, computer anxiety and perceived ease of use and perceived ease of use and behavioral intentions will be used to find explanations to the causes of use and non-use of electronic information resources among the students under survey.

### **3.2 Types and availability of electronic information resources (EIRs)**

Historically, the academic library has been the information repository for the generality of the academic community. This function has not changed in the present time except that there have been changes in the format of information, communication and ways of access. According to Islam and Mamum (2013), the speed at which information communication technology has grown and evolved has changed the traditional library into an electronic and digital library and this has completely changed the nature of the academic library. As Agboola and Bamigboye (2011) have shown, the emerging role of libraries as centers of information professionalism in the new knowledge dispensation is enhanced by their ability to make available and accessible information that can adapt and suit new applications and improve the efficiency of existing ones. Emery and Stone (2013) note that, in the digital environment, electronic information and services are constantly evolving and changing. What was seen as a state of the art two years ago may have become obsolete now. This change is the need of the hour imposed by the demand of the emerging information environment of the higher education system, thus making academic and research activities more productive, and leading to the creation of stronger networks among academic libraries to satisfy the needs of the academic community.

Little (2013) states that, for centuries, the core mission and major aspect of the academic libraries' function is the selection, organization of printed information resources for clients, but for two decades now this has changed to include the provision of large-scale access to electronic information resources such as indexes, e-journals, e-books, newspapers, maps, sound recordings and all forms of data. Furthermore, full-text and on-line content have been available in academic

libraries for over two decades now (Stewart, 2011). Kim (2011), also adds that academic libraries, especially those in the universities, have spent huge amount of resources in providing digital information and making it available on-line. In this regard, EIRs have dramatically increased in academic libraries (Hogarth and Bloom, 2008). This has had significant budgetary effects on library management. Academic libraries, against all odds, are making considerable efforts at making EIRs available either through purchase, subscription to databases, belonging to consortia or engaging in inter-library co-operations. For example, the budgets of Korean university libraries have increased from 10.96% in 2000 to 19.0% in 2004 (Noh, 2010). Also in the US, this rose from 12.88% between 1992 and 2000 to 40.95% between 2005 and 2006.

According to Library Journal and School Library Journal (2011), approximately 95% of academic libraries in the US offer e-books which consume up to 19.1% of their budget over a five year period. This is concrete evidence of the effort made by academic libraries responsiveness towards making EIRs available to support research and academic activities especially in the current information era. Chauchan, Chad and Kaur (2011) have explored the joint ventures and consortiums formed by academic libraries to enable them meet the demands of their clients. In India, academic libraries are taking advantage of the initiatives of the UDC-INFONET and INDEST consortiums that are dedicated to the provision of EIRs at reasonable subscription rates (Dhanavadan and Tamizhchelvan, 2012). The Anatolian Universities Libraries Consortium (ANKOS) in Turkey is another initiative that enables university and research libraries to have unlimited access to a large number of EIRs (Cukadar, Ayhan and Gultekin, 2012). Chifwepa's (2003) survey of the use of intranet and internet by teaching staff of the university of Zambia reveals that the academic library at the University of Zambia has a well-equipped digital library to serve the EIR needs of staff and students. Togia and Nikolaos (2009)'s overview of the state of EIRs at Aristotle University, Thessaloniki, Greece also shows that the university library offers a wide range of electronic resources which include 19,000 e-journals, about 400 e-books and over 80,000 bibliographic databases. These are made available through subscription and her membership of Hellenic Academic Libraries Consortium (Heal-Link). Ingutia-Oyeike and Archie's (2010) comparative study of the use of EIRs by undergraduate students at two Kenyan universities sheds light on the efforts made to offer EIRs to library users. Both libraries subscribe to important databases such as AGORA, HINARI, Emerald, Cambridge University Press and Ebscohost and they are members of the Kenya Library and Information Services Consortium

(KLISC). Also available in their EIRs stock are CD-ROMs, DVDs, VHSs tapes, audiocassettes and microfiche films.

Similarly, Gakibayo, Ikoja-Odongo and Okello-Obura's (2013) study of EIR utilization by students of Mbarara University Library reveals that the academic library subscribes to several databases and provides internet facilities to clients. Parameshwar and Patil's (2009) survey of internet use at Gulbarga University Library, India, demonstrates the growing availability of EIRs and internet accessibility to faculty and students at the university. Similarly studies include Bravo, Diez, Almuzara and Suarez's (2008) survey of the patterns of use of the electronic journals and EIRs provided by Spanish University libraries, . . . Khan, Zaidi and Bharati's (2009) survey of the use of online databases by faculty members and research scholars of Jawaharlal Nehru University (JNU) and Jamia Millia Islamia (JMI), New Delhi, India as well as Amjad, Shamshad and Salman's (2013) study of the EIRs available in Islamia University of Bahawalpur, Pakistan.

A study of electronic resources usage in academic and research institutions in Tanzania conducted among ten tertiary institutions (7 universities and 3 research institutions) by Manda (2005) disclosed that all the institutions have made commendable efforts in making EIRs available to their students and staff. The study also revealed that most of the institutions libraries belong to consortia (Program for the Enrichment of Research Information (PERI)) and subscribe to various databases to which clients have unrestricted access to. Tyagi (2011) gave a report of the great stride taken by the academic library at the Indian Institute of Technology (IIT) Roorkee in making EIRs available to her academic community. The library lays more emphasis on the provision of electronic information resources, hence has provided access to more 8000 electronic journals which are made available through the main library network to all campuses. The library also have in a her stock all forms of electronic documents such as CD-ROMs, online databases, audio-visual material, theses reports and so on. Millawithanachchi (2012) also reports the extent the academic library at the University of Colombo, Srilanka has gone in making EIRs available to her university community. The study of Millawithanachchi also reveals that the library at the University of Colombo has taken advantage of the International Network for the Availability of Scientific Publication (INASP) and a Program for the Enhancement of Research Information (PERI) consortia and supported by the Swedish International Development Agency (SIDA) to acquire several large on-line full-text electronic databases, the library also subscribes to various databases such as JSTOR,

Emerald, Ebsco Host and Hein On-line. Through this effort students and staff can access thousand of peer reviewed full-text periodicals from different publishers and databases.

Academic libraries in Nigeria have also recorded progress in the area of EIR provision in spite of the difficulties of limited funding. Like other countries academic libraries in Nigeria have established various consortia such as the Nigerian University Libraries (NULIB) as well as initiatives by the National Universities Commission (NUC) to subscribe to electronic databases (Obasuyi and Usifo, 2013; Fabunmi, 2009). Through these, Nigerian university libraries enjoy access to the Global Online Research in Agriculture (AGORA), Electronic Information for Libraries Network (EIFL.NET), Health Internetwork Access to Research Initiative (HINARI), Online Access to Research in Environment (OARE), and the Pharmaceutical Education and Research institute (PERI) as Rosenberg (2005) reports. Several studies have confirmed the availability of both print and electronic resources in university libraries across the country (Agboola and Bamigboye, 2011; Adegbija, Bola and Ogunsola, 2012; Mufutau, Okunlaya and Ibrahim, 2012).

South African academic libraries have also taken giant strides in the provision of EIRs to members of the academic community. One of the major consortia established to provide EIRs is the Coalition of South Africa Library Consortia (De Jager and Nassimbeni, 2002). Several studies thus attest to the availability and use of these resources in university libraries across the country (see Nkomo, 2009; Idoniboye-Obu, 2013). It has also been the case in South Africa that the provision of EIRs consumes a considerable portion of the budget of libraries (Stewart, 2011).

### **3.3 Extent of EIRs use by doctoral students of OAU and UKZN**

There is extensive literature on the use of EIRs by members of diverse academic institutions. A study on the availability and utilization of internet facilities by postgraduate students in federal universities in the southwest region of Nigeria by Adegbija, Bola and Ogunsola (2012) reported increased use of the internet by the postgraduate students of Obafemi Awolowo University, Ile-Ife, as well as those of University of Ibadan and University of Lagos, Nigeria. The study participants comprised of PhD, MSc and other postgraduate students. The survey result shows that 83.4% and 80.4% confirmed they use internet resources such as search engines and e-mails very often and often respectively. In a similar study conducted by Oyedapo and Ojo (2013) it was revealed that contrary to the findings of Adegbija, Bola and Ogunsola (2012), postgraduate

students make minimal use of electronic information resources. The study was conducted to assess the electronic information resources available at the Hezeiah Oluwasanmi Library and the rate at which these resources were used by the postgraduate students of the institution. It was revealed that only an insignificant percentage (6%) of students surveyed used electronic resources frequently. Similarly Fabunmi and Asubiojo (2013) discovered from their study of awareness and use of Online Public Catalogue by students of Abafemi Awolowo University, Ile-Ife that majority of postgraduate students make more use of manual catalogue than the OPAC, although the result show that 68.7% of the respondents are aware of the OPAC services.

Soyizwapi's (2005) study of the use of electronic databases by postgraduate students in the faculty of science and agriculture at the University of KwaZulu-Natal, Pietermaritzburg, revealed that majority of postgraduate students encountered several problems when using the electronic databases hence resulting to low use of the resource. It was reported that there is gross underutilization of the EIRs, despite the huge amount of fund invested in its provision (UKZN Annual Report, 2012). It is important to mention at this juncture that studies on doctoral students of UKZN use of electronic information resources are sparse. For example a search of related studies on online databases such as eSA, ePublications, current and complete thesis via Sabinet databases did not find any study on use of EIRs by doctoral students of UKZN, South Africa; hence this study seeks to find out if doctoral students are also involved in the underutilization of EIRs reported by UKZN annual report. The study will also proffer ways of dealing with the menace of EIRs underutilization.

### **3.4 Electronic information resources preference of PhD students**

It will not be out of place to say that the presence and use of electronic information resources is more than ever a reality which can no longer be contested especially in the university community. Electronic information resources generation and availability on its own has been greatly influenced by the impact of digitizing technology, hence they appear in diverse forms, quality and astounding quantity. Given the availability of various forms of EIRs, the choice of users is influenced by several variables that are discussed later in this study progresses. In this regard, researchers have sought to understand, identify and establish what particular EIRs are preferred by particular group or groups.

Washington-Hoagland, Leo and Christine (2002) conducted a survey to identify the resources and service needs of graduate and professional students at the University of Iowa. One of the objectives of the survey is to find out what library services, resources, collections and facilities graduate and professional students use to support academic activities. These were captured in the surveys questions 42-46. The study sampled 318 graduate students on doctoral and masters program except postdoctoral students from all colleges of the university. The report of the result showed that respondents use electronic indexes and bibliographies more than any other electronic resource. The result shows that the use rate of electronic indexes and bibliographies is 68%. This is followed by electronic journal which scored 48% and electronic books which scored 32%. Further analysis revealed that a significant number of the respondents never or rarely used electronic maps/aerial photos (95%), electronic videos (85%) and electronic newspapers (83%). It can therefore be concluded from the report that PhD students of Iowa University have high preference for electronic indexes and bibliographies for information to support their academic activities.

Liao, Mary and Jun (2005) did a comparative study of the information seeking behavior of international graduate students and American graduate students. The total population sampled which comprised PhD and MSc students was 315 of which American students are 224 (71%) and international students are 91 (29%). Respondents responses to where (location) they usually find needed information, on the whole the use of electronic journals is favored over electronic databases provided by Virginia Tech and library books. E-journal use rate is 76.60%, electronic databases 44.80% while library books scored 44.30%. Further analysis revealed 58.2% of international students reported to find needed information in library books while only 38.8% of American students found their answers in library books. The study concluded by pointing out that the difference in preference notwithstanding, the research demonstrates that respondents preferred electronic format of information compared with print format.

Tenopir, Rachel and Lisa (2013) investigated the reading habits of postgraduate students in 2012 at two universities in Australia (University of Queensland and University of New South Wales). The survey included 352 postgraduate students out of which 85 (32.1%) were doctoral students from various disciplines including social sciences and humanities. The result demonstrates that while postgraduate students still read print information resources an increased preference for electronic resources was revealed. The analysis of the result shows that 95% of the information

resources obtained from the library were from electronic collection. The study revealed further that most of the readings whether from book or journal were mainly for research (theses and dissertation) or for assignments and other course work.

Similarly, Al-Saleh (2004) explored the EIR needs of graduate students in Saudi Arabia. A total number of 480 graduates were drawn from all the 6 universities in Saudi Arabia from science and engineering, education, religion and language, business, social science and art and medicine/dentistry and pharmacy. Graduate students included in this study included master's students (422, 87.9%) and doctoral students are 58, (12.1%). The result of the research indicated that respondents make more use of the internet 60.2% and Online catalogue 59.0%, than electronic journals 52.9%, databases 50.4% and other links on the libraries website 45.1%. Further analysis indicated that PhD students users of electronic resources were 22 (37.9%) non-users were 36 (62.1%) indicating that majority of PhD students in Saudi Arabia prefer print resources to electronic sources.

Riahinia and Zandian (2008) investigated information providers and search engines popular among postgraduate students at Tarbiat Moallem and Tarbiat Modare universities in Tehran, Iran. It was observed that postgraduate students comprising of Phd and MSc students from the two institutions survey preferred online databases and search engine than printed information resources. The result obtained from the findings show that 63.4% and 24.3% use online databases and search engines respectively and 11.3% use printed materials. Shukle and Mishra (2011) also revealed a high preference for electronic resources among research scholars at the Banaras Hindu University Institute of Technology (BHUIT), India. The result show that 64% of the respondents investigate stated they prefer electronic information resources to print. A review by Dadzie (2005) reveals respondents preferred some electronic resources over their print counterpart and preferred some print resources over their electronic version. This study was conducted at the Ashei University College, Ghana to assess the access and usage of electronic resources among graduate students. This was observed in the result showing that 68.8% respondents preferred electronic journals to printed journals while 71.8% preferred printed books to electronic books as against 28.27% who preferred electronic books.

### **3.5 Impact of EIRs on doctoral students' research**

The increased rate at which EIRs are used by members of the global academic community is an indication of their contribution to academic activities especially at doctoral level which is demanding (Naom, 1997; van Zijl, Elizabeth and Myrna, 2006; Barrs, 2011; Tenopir, 2003), requiring the timely access and use of quality and current information. Dulle, Mulimila, Matovlo and Lwahabura (2002) assert that information access is an important pre-requisite for an efficient, productive and relevant research system. According to Grace, Kenny and Qiang (2004), universities need to provide access to information communication technology and electronic information, in order that doctoral students get access to wide range of information to support their research work without which universities will not be able to compete effectively in the international research arena. In a recent study by Tomaszewski (2012), doctoral students attested to the importance of EIRs to their research projects. Costa and Meadews (2000) demonstrate that there is a positive relationship between the use of internet by scholars and research productivity. The purpose of that study was to investigate the impact of computer usage on scholarly communication among social scientists (economists and sociologists) in Brazil. The study revealed further that participants affirmed that with the use of electronic information resources their research productivity has been enhanced. Evidently the web has proved to be a powerful, active and flexible information mine that has fundamentally altered academia and her research procedure and interaction with information as a result of additional avenues available to retrieve scholarly information (Naude, Rebsliegh and du Toit, 2005). With ICT information access and retrieval have been made easier. The British library in conjunction with JISC conducted a study of the research behavior of "Generation Y" doctoral students. Doctoral students from over 70 institutions participated in the survey. The survey investigated among other things doctoral students' research practices, access to e-resources and use of technology. The study found that over 70% of the participants make use e-journals and affirmed that technology (EIRs) played significant role in their research lives. The result indicates that the advent of digitizing technology has made it possible for this generation of researchers to be largely at ease in the complex information environment, navigating with confidence the wide range of information sources available to satisfy their information need (SCONUL Focus 56, 2012).

Barjak (2006) conducted a survey to assess the research productivity of European research scholars in the internet era. The study in which 1400 scientists were surveyed from seven European countries and across five different disciplines revealed that there is a positive relationship between internet use for information retrieval and communication and research productivity. Barjak's study shows that the research output of those scholars who used electronic information resources are higher than those of their peers who do not use electronic information resources. Kaminer (1997) commenting on scholars use of the internet states that with the use of internet and electronic networks scholars research productivity will be improved as the internet (EIRs) will enable them be faster and more efficient in their research work. In the same vein, Vakkari (2008) in Finland found that in the opinion of researchers in Finnish universities, electronic information resources use has improved the quality of research work and facilitated their creation of new ideas. He concluded by adding that the investments in academic digital libraries have proved to be beneficial to doctoral students and entire university community. In a study titled use of electronic resources among undergraduate and graduate students the perceived benefits of electronic information resources were categorized into two, namely the ease of access of information and the comprehensiveness of electronic information resources. In terms of ease of access of information participants listed the following benefits:

- EIRs make information available 24 hours a day and 7 days a week.
- Student can work from anywhere. They no longer need to make several personal visits to the library or go there to do their works strictly on library opening hours.
- EIRs save time in searching and retrieving information.
- Doing online research allows you to access and use more information quicker.

With regard to the comprehensiveness of EIRs, the following benefits were listed:

- All the information one needs are available in one place.
- They provide a wide range of resources.
- They give researchers/students access to information they would not ordinarily have been able to find on their own.
- Electronic information resources provide a general overview of what is available on every topic (Vakkari, 2008).

The study involved different categories of students including doctoral students from the earth and environmental disciplines from Colombia University who all confirmed the importance of EIRs to their research. It concludes thus:

overall the students interviewed view e-resources as an asset that positively affects their schoolwork. These students believe that e-resources make doing research a quick process, which means they have extra time that can go into the writing and editing of the paper. Because it is easier to look up a key word in database, students are more likely to try several search options and several different databases. This results in obtaining a diversity of resources and more current resources. The end result is that the paper is more thorough and robust with the ideas presented coherently (Vakkari, 2008).

Given the benefits of EIRs, there is little wonder that its increasing use is matched by the steady reduction in the use of printed resources (Tenopir, 2003; Ojedokun and Owolabi, 2003; Dadzie, 2005; Ajala, Adegun, Adetunji and Oyewumi, 2010; Nweze, 2010). There is an indication that this trend will go on as many more users gain access to electronic information resources. However, in recent similar studies by Aina, Adigun, Taiwo and Ogundipe (2010), Ahaioma, Chimezie and Oluchi (2013), Fabunmi and Asubiojo (2013) and Oyedapo and Ojo (2013) earlier reviewed in this study it was revealed that doctoral students in Nigeria have not been impacted much by EIRs. This is partly believed to be due to underutilization of the resource caused by a lot of factors. In the case of South Africa as stated earlier there is hardly empirical evidence reporting doctoral students' use of EIRs. A study of this nature becomes imperative. According to Mgobozi and Ocholla (2002), there is the need for researchers to conduct quantitative studies on the effects of e-resources on research and academic productivity.

### **3.6 Extent of electronic information resources use by social sciences doctoral students**

The use of EIRs has increased in popularity as it affords users the opportunity of accessing current information from almost anywhere in the world when one has the means to do so. Recent research shows that social science researchers have been found to be ardent users of electronic information resources (Barrett, 2005; Ge, 2010). However, Gessner, Damon, Jenifer and Kornelie (n.d.) have found that humanities doctoral students of Cornell and Colombia Universities still prefer printed

resources to electronic information resources. Wu and Shih-chuan (2011) also report that social science graduate students (doctoral students inclusive) of the National Taiwan University, Taipei use e-books infrequently. The result shows that the students interviewed read printed books more than e-books. From the foregoing, it is important to investigate the extent of EIR usage of social sciences doctoral students at the selected universities in South Africa and Nigeria to establish if they are perceived as important information sources by this group of students. Since it is evident that electronic publication is gradually replacing print publication (Tenopir, 2003; Onilude and Apampa, 2010).

### **3.7 Factors that influence use of EIRs by doctoral students**

Korobili, Aphrodite and Sofia's (2011) in a survey of EIR use among graduate students at Aristotle University of Thessaloniki represents a significant attempt to chart the information seeking strategies of graduate students engage during their use of EIRs. It also sheds light on the perceived influence/different factors and barriers in developing information seeking behavior. The survey included several disciplines in line with scholarship on the importance of discipline as an influence on information seeking behavior. It was found that discipline has no significant influence on the information seeking behavior of the graduate students of the faculties of engineering and philosophy at the Aristotle University. It was further revealed that other factors such as computer and web experience, search experience, perceived ability and frequency of use of electronic resources are more likely to affect the information seeking behavior of the graduate students. The study was concluded by confirming that majority of students surveyed demonstrated a low to medium level of information seeking behavior thus recommends improvement on information literacy skills of graduate students.

According to Liu and Luo (2011), the lack of awareness of services and resources has been discovered to be one of the leading factors of non-use of EIRs in the virtual reference environment. The researchers therefore recommend a reconsideration of libraries' circulation policies to give room for simultaneous searching of library's catalogue and databases and better advertisement of the library's resources and services to create awareness of and promote her services and resources among clients.

Lamonthe (2013) studied the factors that influence e-book collection usage by students and faculty members at the Laurentian university, Sudbury, Ontario, Canada. The study that was conducted over a nine-year period examined several factors that could influence e-book usage. It was revealed that the size of an e-book collection proved to have an extremely strong relationship with the level of usage e-books had. It was also revealed that the content of a collection also greatly influences users acceptance and utilization of an information resource. The study however concluded by stating that academic program can also influence electronic resource usage since the relative relationship strength revealed by the study result suggests that doctoral students' number demonstrated the highest involvement with use of e-resources. The findings of George, Alice, Terry, Erika, Gloriana and Joan (2006) indicate that graduates' use of a particular resource such as the electronic information resource is influenced by a variety of factors of which accessibility is key. This discovery was made from a study of scholarly use of information by graduate students of Carnegie Mellon University. The survey included 100 respondents representing every discipline and department of the Carnegie Mellon University. Graduate students identified preference for convenience or need to have information quickly (58%), lack of knowledge of service (42%) and course requirements (28%) as major factors that influenced their choice and use of electronic resources provided by university library. Although this result varies according to discipline, the study concluded by stating that the university library should strive to provide more user friendly and accessible electronic information resources for the university community. Similar to the above, Shukla and Mishra (2011) have submitted from their investigation of use of e-resources by research scholars of the Institute of Technology, Banras Hindu University, India that awareness and quality of electronic resources are important factors that influence the efficient and maximum use of electronic information resources. The study has revealed an increased level of awareness and use of EIRs which has influenced the level of EIRs usage by 64% of research scholars surveyed. Similarly, Sharma and Lokesh (2013) have revealed from their instigation of information seeking behavior that convenience, lack of sophistication in finding and using resources such electronic information resources and course requirement influence the use of information sources of users. This investigation was carried out using the students, research scholars and faculty of the schools of management and business studies in national capital territory (NCT) of Delhi.

Oladimeji and Ogunlade's (2012) indicate that proximity to cybercafés and the validity of information found on the internet were motivating factors for the use of use of the internet by graduate students in Nigeria. The study shows that 53.1% of respondents strongly agreed that proximity to cybercafé influenced their use of the internet while 50.2% of respondents stated that valid information influenced their use of the internet. The study concluded by recommending that internet services be made accessible for the generality of users by university library to enhance usage of electronic information resources. Okiki and Asiru (2011) argued that the motivating factors to use electronic information resources varied according to students' programme of study, need for information to excel in academic work and proficiency in the use of information technologies to search for information. This was revealed from a study conducted using six universities from the south west region of Nigeria. A total number of 2187 respondents were surveyed which spanned a wide variety of disciplines out of which 245 (11.20%) were doctoral students. The indices of the analysis show that respondents' first motivation to use electronic resources for their research (79.61%), the next major motivating factor is quick access of information (60.22%) followed by searching for new information/things (54.92%), writing of term paper (47.78%) and course work (47.83%). While factors such quality of resources, currency of information, assisting others to get materials and less expensive were less considered as influencing factors to use electronic information resources. The study revealed further that high experience in the use of electronic resources also influenced students' rate of usage of electronic resources. It was revealed that 70.78% of the respondents had received formal training on use skills of the computer and the internet hence it was easier for them to adapt to digital information retrieval and use. The study however concludes by recommending that institutional bandwidth be expanded in universities with uninterrupted power supply to ensure maximum and effective use of electronic resources in the various universities. The need for information literacy program to improve users' information skills still lagging behind in EIRs use was also recommended.

Urquhart et al (2003) argue in line with Okiki and Asiru who discovered that while disciplinary differences do matter, PhD students exhibited skills at the upper end of information retrieval and use than undergraduate students. With long experience in research and use of information they have become more aware of diverse sources of information and experienced in their use skills, this has influenced their use of and made them more active users of electronic information resources than undergraduate students. This was revealed from the study of "uptake and use of electronic

information services: trends in UK higher education from the JUSTEIS project". Liu and Zheng (2004) carried out a research on the factors influencing distance education graduate students' use of information sources, the result shows that preference for easy and fast information retrieval is a strong motivating factor for using electronic information resources. The study revealed further that demographic factor such as field of study also accounted for differences in the choice of primary information sources used among distance education graduate students of the Texas A and M university (TAMU). Analysis of the result shows that 51 out of 164 respondents indicated that fast information retrieval as their motivating factor for using the internet. Students, fields of study were correlated significantly with their choices of primary information sources. However, the study did not reveal any significant differences in the age, gender and information literacy level. Abdul Rahman, Zamalia and Adnan (n.d.) in a study of age, gender and race differences in the usage of digital library among Malaysian postgraduate students argued that demographic factors such as race and age differences have significant influence on digital library use of postgraduate students; whereas sex was not found to be of much influence on digital library use. The research was conducted using 534 PhD and masters students selected randomly from 4 Malaysian research intensive universities. The result revealed that Malay and Chinese postgraduate students indicated more anxiety for digital library use than Indians and the others. In terms of age postgraduate students between the age group of 31 and 41 made higher and more use of electronic sources than students between the age group of 21 and 31 their higher level of computer use skills notwithstanding.

Level of income and program of study have been found to be motivating factors in the use of EIRs among postgraduate students (Mufutau, Okunlaya and Ibrahim, 2012). This discovery was made from the result of a study conducted to ascertain the significant influence of level of study, gender and program of study on the use of digital libraries by postgraduate students in private universities. The study sampled 260 PhD and masters students from Babcock University, Ilisan-Remo and Covenant University, Ota, Ogun State, Nigeria. This study concludes that gender has no association with electronic resources use and recommends sensitization program on the benefits of digital resources to the generality of users. In addition, Sadler and Lisa (2007) have identified level of technical support given to students by academic libraries as a motivation for exploring new digital territories. It is therefore assumed that if given the right support users will make more and effective use of EIRs.

### **3.8 EIRs use competence of PhD students**

According to Dutton (1990), use of EIRs requires the acquisition of more skills greater than those required to use print resources. Although, as Virkus (2003) observes, there has always been the need to find and effectively use information, the abilities and skills required to do so have become more complex following the evolution of ICTs. To become competent in EIR use one requires knowledge of the structure of databases and the instructions that have to be input into the computer by the searcher, as well as an understanding of the method in which the instructions connect with one another (Ray and Joan, 1998). Discussing the process involved in information problem solving (IPS), Brand-Gruwel, Wopereis and Walraven (2009) emphasized that surfing internet for information a great deal different from searching a library database or the table of contents of a textbook. In most cases, EIRs have advanced structures and come in various volumes and vast quantity and there are no gatekeepers that filter them for users/searchers consumption. Brand-Gruwel, Wopereis and Walraven (2009) found from their study that previous knowledge of computer use is an advantage in the IPS process. By implication it is important for all categories of students to acquire (PhD students inclusive) a considerable level of computer skills to be able to search the World Wide Web. Computer use skills become vital for PhD students as they are involved in the use of vast amount of information in their research activity. In addition, the demands of the information society requires citizens to be life long, self directed learners who have acquired the skills to filter information and more powerful skills than mere information finding skills and tools (Machionini, 1999).

According to Machionini (1999), information literacy has become a fundamental skill that must be taught at all levels in formal learning environments. In this regard, ALA (1989) describes an information literate person as one who knows how to define a subject of inquiry clearly, is capable of selecting the appropriate terminology to express the focus of the subject under investigation, formulate search strategies by using diverse information sources and various ways information is organized, make valuable, relevant, quality and suitable analysis of data generated, and transform data and information to knowledge. According to Breivik and Gee (1989), information literacy is promoting good information consumption, and promoting individuals who understand how information resources are handled and manipulate. A more generic definition is given by Shapiro and Hughes (1996). According to them, information literacy is a new liberal art that develops from

knowing how to use a computer for multiple tasks and accessing information to critical reflection on the nature of information itself, its technical infrastructure and its social, cultural and even philosophical context and effect. They argue that information literacy encompasses several literacies that go beyond the traditional technical skills promoted by computer literacy. According to them, seven types of literacy can be identified that composed information literacy. These include tool literacy (this has to do with traditional computer literacy); resource literacy (aspect of bibliographic training); socio-structural literacy (recognition of the context of information in a group or an institution); research literacy (methods and tools); publishing literacy (writing and content production); emerging technology literacy (ability to adapt and life-long literacy) and critical literacy (ability to evaluate information and information technologies). Marchionini (1999) argue that information literacy can be promoted at any educational level as all categories of students perform the five constituent skills of defining information problem, searching information, scanning information, information processing and organizing and presenting information (Brand-Gruwel, Wopereis and Walraven, 2009). It can be drawn from the above that for doctoral students to be competent users of EIRs, it is important that they acquire formal training in information literacy (Probert. 2009).

### **3.9 Adoption and acceptance of EIRs**

According to Kwadzo (2015), EIRs now form an essential part of many academic libraries. This phenomenon is conceived to be as a result of the adoption and acceptance it (EIRs) has received by academia. This can be inferred from the rate at which academic libraries all over the world are introducing ICTs and digitizing their collections. Chisenga (2006) has provided an overview of the extent of the adoption and use of ICTs and EIRs in 17 universities and academic libraries in the sub-region of Eastern, Southern and Central Africa as well as in Nigeria, Ghana and Cameroon. He reports that South African universities and academic libraries are in the lead among the countries studied. The study reveals that in South Africa, Universities of Witwatersrand, Western Cape, Pretoria, Johannesburg and Rhodes University have adopted the use of EIRs. Also Addis Ababa University, Ethiopia, Eduardo Mondlane University, Mozambique, Kenyatta University, Kenya, Makerere University, Uganda, University of Dar es Salaam, Tanzania and University of Zimbabwe are reported to have adopted the use of EIRs and put in place ICT infrastructure for this purposes. Others include the National University of Lesotho, Copperbelt University, Zambia and

the University of Malawi. In Nigeria, it has been observed that most university students have adopted and accepted the use of EIRs (Adegbija, Bola, Ogunsola, 2012; Haliso, 2011; Ani, 2013; Egberongbe, 2011). Similarly, Agaba, Kigongo-Bukenya and Nyumba (n.d.) revealed that Makerere University, Uganda has equipped her academic library with EIRs as a result of students' high acceptance of it. Kwadzo, (2015) study reveals that the academic library at the University of Ghana has provided EIRs which have been adopted and accepted by the users of the university.

In India, Nisha and Ali (2013) ascertain that the users of IIT Delhi and Delhi University libraries have adopted the use of EIRs. The academic libraries in IIT Delhi and Delhi University are equipped with EIRs ICTs infrastructures. Chen (2009) in Wu and Chen (2011) reports that the e-book stocked by universities libraries in Taiwan rose from 56,847 in 2007 to 89,668 collections in 2008. According to Ridwan (2014), the availability and use of EIRs in libraries is the cause of the paradigm shift in the function of traditional libraries to those of digital libraries. It has been found that most postgraduate students of University of Peradeniye, Sri Lanka, including doctoral students, make use of EIRs (Peiris and Pieris, 2012). Bansode's (2013) study of the use and impact of electronic journals at the University of Pune, India revealed that the majority of postgraduate students there prefer electronic journals. Gibbs, Jennifer, Jill and Heather's (2012) study of the research needs of graduate students of Georgetown University, Washington revealed that students cited webpages, databases and data sets as some of the most used resources. Most PhD students interviewed appreciated and expressed satisfaction with the availability of EIRs to support their research process. It can be implied from respondents' responses that EIRs has gained high acceptance and has been adopted as crucial to their research progress. In the last few decades the growth of EIRs is nothing but dazzling such that these days students rely more on electronic access rather than on traditional print documents making it a valuable tool for information users (Pandurangaswamy and Avineni, 2013).

The adoption and acceptance of EIRs is also evident from the huge investment being made financially on EIRs acquisition, dissemination and maintenance (Weingart and Anderson, 2000; Kim, 2011). It is reported that at China's Wuhan University has acquired 422 databases, 6,590,000 e-books and e-magazines (Nzivo and Chen, 2012). EIRs and online medium of information communication has been fully accepted and adopted in all fields of life and as such academia has

been compelled to adopt these media which include providing access to electronic resources; acquiring CD-ROM based set; digital databases; providing services for networked CD-ROM environments and digital documentation (Amjad, Shamshad and Salman, 2013). Studies of have found that students at all levels demonstrate that the matchless advantages of EIR use are responsible for its extensive acceptance and adoption (Rao, 2004; Velde and Ernest, 2009; Bob and Chris, 2007; Igbeneghu and Aderinto, 2011). These include convenience of accessing a book without the limitations of time and distance, easy access to information, the ease of using keyword search in locating a word of sentence from a full-text electronic book or journal, adjustable brightness and font sizes provided by EIRs makes reading comfortable. Other advantages include the fact that electronic information can be read on mobile devices computer and can be printed out for further reading making it more flexible and adaptable format for researchers.

### **3.10 Information behavior of PhD students**

The academic world has been affected by the digital technology such that the electronic environment has changed scholars' information behavior and they now rely heavily on electronic resources for their research. EIR has become the most preferred source of information for scholars to keep abreast with information in their discipline (Olle and Borrego, 2010). Gibbs, Jennifer, Jill and Heather's (2012) study of the research needs of graduate students at Georgetown University revealed that students make heavy use of both print and online books and journals for research purposes. The study reveals further that many of the respondents lacked awareness of what the library offers and how to get access to these resources resulting in underutilization of EIRs. In the United Kingdom, Armstrong, Fenton, Lonsdale, Stoker, Thomas and Urquhart (2001) did a survey titled 'a study of the use of electronic information systems by higher education students in the UK.' The purpose was to examine the level of information systems and information seeking behavior of university students. The study population consists of both doctoral and undergraduate students. The study research result revealed that respondents made more use of search engines, e-mails and OPACs and minimal use of electronic databases and electronic journals. The study outcome indicates that low use of databases and e-journals is suggestive of the fact that respondents which included doctoral students lacked skills to use e-journals and are unaware of their importance and presence in the library. Liu (2005) studied to explore the extent to which graduate

students at the San Jose State University, in the US use print and electronic resources. The study titled 'print vs. Electronic resources: a study of user perceptions, preferences and use' revealed that majority of the respondents (51.9%) which also included doctoral students usually consulted library online resources (such as e-journals) first for completion of assignments and other research activities before considering print resources. 28.6% indicated they turn first to the web while only 15.8% turned first to print resources. The study outcome reveals that the information behavior of the doctoral students of San Jose State University has changed significantly as students now consider electronic information resources first before considering printed resources. Liu, however recommends a hybrid information environment by stating that online information does not supplant information in print but adds new access opportunities for users to choose.

The information behavior of research scholars at the Islamia University of Bahawalpur, Pakistan has also been affected by EIRs (Amjad, Shamsad and Salman, 2013). The study surveyed masters and PhD students to understand the current use of electronic resources, the purpose of their use and the problems encountered while using them. Majority of the students made frequent use of electronic resources for learning, education and research purposes. De Rosa, Cantrell, Hawk and Wilson (2006) confirmed in a survey of 396 respondents from North America, Australia, India, the UK and Singapore that majority of college students begin their information search by consulting online resources. According to Emery and Graham (2013), there has been a significant behavioral change in research publication in the present information environment in the UK. For their part, Brown and Swan (2007) have demonstrated PhD students' information behavior in the US and Australia have been affected greatly by EIRs as they rely mostly on electronic findings to search for information and information sources. Drachen, Asger, Eystein, Hilde and Karin (2011) studied the information behavior and practices of PhD students from Copenhagen University, University of Oslo and Vienna University and found that Google is widely used by all respondents especially at the beginning of their search processes. Another significant finding is that online libraries are highly in use while the library's physical space is used less.

### **3.11 Attitudes of PhD students towards the use of EIRs**

According to Dehigama and Dharmarathne (2015), the trend in the information world and rapid development in electronic publishing has changed the perceptions and practices related to

information access and usage among PhD students. In an earlier study, Littman and Lynn (2004) compared the use of 7,880 information resources provided in print and electronic formats at the Duke University libraries, Durham. Eight subject areas were covered in the study – literature, philosophy, psychology, computer, arts, engineering, manufacturing and technology. The usage analysis was done by assigning each title to one of the thirty subject categories based on the Dewey Decimal Classification Scheme. This method enabled the researchers to identify the access of print and electronic books. The study found that electronic books are used 11% more than print books. Indicating that electronic books use is more popular among the users of Duke University libraries (which include PhD students) than printed books. The authors note that there is the tendency that the popularity of electronic books may increase as the library expands her e-books collection available to users and users gain more awareness of and become more familiar with e-books. Gowda and Shivalingaiah (2009) studied the attitudes of research scholars towards usage of electronic information resources. Respondents were drawn from six Karnataka state universities from the social sciences, humanities, and sciences. The study showed that despite the poor state of electronic information resources/services at the six universities respondents indicate high value for electronic resources. A significant number of the respondents (41.88%) indicated preference for electronic resources. Majority of the respondents agreed that they find EIRs useful to their research work and EIRs have changed their mode of information search and use. The increase use of print resources according to the authors is as result of the deplorable state of EIRs and information communication technology infrastructure in the universities.

In addition, the study revealed that the libraries in the six universities need to upgrade their electronic information resources and services to meet the needs of their user, and also to engage in awareness program to showcase the electronic information resources and services provided by their libraries. As this will enable students harness the full benefits of EIRs and compete effectively with their counterparts globally. On the other hand results from several researches conducted recently on similar subject are in the opposite direction. Ahmed (2013) survey of students' use of and satisfaction with university subscribed online resources in two specialized universities in a developing country suggests an irregular use of electronic resources among students from both institutions. The research respondents comprised of 74 postgraduate student including PhD students from Bangabandhu Sheikh Mujid Medical University (BSMMU) and 68 undergraduate

students from Bangladesh University of Engineering Technology (BUET). The findings revealed that majority of students surveyed from both institutions do not make use of university subscribed online resources. The study revealed that respondents are unwilling to use university subscribed online resources as they are not able to access and use electronic resource hence are unable to appreciate the importance of EIRs in research practice.

For their part, Adigun, Zakari and Andrew (2010) investigated the accessibility and usage of scholarly information sources by faculty members and postgraduate students of Ahmadu Bello University, Zaria, Nigeria with the aim of understanding their sources of scholarly information and services for academic purposes. The research results show that both postgraduate students and faculty members find print sources more accessible and usable than electronic sources. The analysis of the result show that use of printed books and journals scored 76% and 75.4% respectively while e-books and e-journals scored 62% and 54% respectively for postgraduate students, revealing that respondents made less use of printed resources. This is an indication that respondents found printed resources more useful in their research work than EIRs. Similarly, Effiong, Nkpah and Ekpeyong (2012) examined the study habits of postgraduate students' in two Nigerian tertiary institutions; University of Port Harcourt (UNIPORT) and Rivers State University of Science and Technology (RSUST). Among others the study examined materials used by postgraduate students for their studies. It was revealed that access and usage of internet facilities was rather minimal. The result shows that whereas respondents make 57.4% (UNIPORT) and 59.4% (RSUST) use of textbooks, lecture handouts/notes the use of internet materials was 25.2% and 26.6% for UNIPORT and RSUST respectively. Ahiaoma, Ibegwam and Chimezie (2013) study is a citation analysis employed to examine the extent of inter sources usage by Nigerian postgraduate students for research, focusing on Micheal Okpara University of Agriculture (MOUAU), Nigeria. The study assessed 327 thesis and dissertations from 22 departments of 6 colleges submitted to the university between the year 2000 and 2010. It was revealed that internet sources cited in the thesis and dissertations examined were insignificant compared to printed sources. Indicating that doctoral students at Micheal Okpara University of Agriculture (MOUAU), Nigeria made less use of electronic information resources for theses writing.

Positive or negative attitudes towards EIR use are associated with a variety of factors. Therefore, it may be inappropriate to conclude that respondents in the study above have negative attitudes

towards EIRs as inadequate skills may bring about disuse of a particular system (Chisenga, 2006). It is therefore important to investigate the factors that encourage EIR use among doctoral students in South Africa and Nigeria in order to understand similarities and differences in their use pattern. This is expected to contribute to the limited research on the use of EIRs among doctoral students in South Africa and Nigeria in the present digital age and also to promote access to, and use of EIRs in the selected institutions

### **3.12 Summary of literature review**

This chapter has provided a review of relevant literature on the subject matter of the research. around the following themes – types and availability of EIRs; extent of EIR use among doctoral students of OAU and UKZN; EIR preferences of PhD students; impact of EIRs on students' research projects; extent of EIR use by the students under consideration; factors that influence their of EIRs; EIR use competence; adoption and acceptance of EIRs; information behavior of the students as well as their attitudes towards the use of EIRs. The review revealed that EIRs use is increasing continuously although with varying degrees even among developing countries of the world. In Nigeria and South Africa academic libraries are found to have provide EIRs against dwindling budget. The review also revealed varying degree of EIRs use among disciplines with sciences demonstrating a higher degree of use than social sciences and humanities. The high EIR use and non-use are caused by various factors which include low awareness of EIRs, low use competence, unavailability, poor access and insufficient institutional support in the use of EIRs among others. In addition, the review revealed that investigations into the use EIRs by doctoral students are limited. Another gap identified in the literature reviewed is in the limited use of mixed methods and the TAM3 theory in existing studies. It is also evident from this review that comparative studies in the context of South Africa and Nigeria are lacking. This study is therefore expected to fill these gaps, contribute to the growing scholarship on EIR use and disuse among doctoral students.

## CHAPTER 4

### RESEARCH METHODOLOGY

#### 4.1 Introduction

According to Welman, Kruger and Mitchell (2010) research methodology can be described as the approaches, methods or techniques employed by a researcher to guide his/her study. Holloway (2005) defines research methodology as a framework of theories and principles upon which a research method and procedure are based. To McGregor and Murnane, (2010) it refers to the way each logic, reality, values and what counts as knowledge informs a research undertaking. Rajasekar, Philominathan and Chimnathambi (2013) describe research methodology essentially as the procedures by which a researcher goes about his/her work of describing, explaining and predicting phenomena in a research undertaking. It also provides a description of the assumptions underlying various techniques and procedures used and explain why certain procedures and techniques are applicable and others are not. It can also be seen as a way to systematically solve the problems identified in a research. It provides a logical explanation to methods and techniques used in conducting a research. Hence, Henning, Van Rensburg, and Smit (2004) describe methodology in research as a coherent group of methods that complement one another and each has the ability to fit, gather data and deliver findings that will reflect the research question and suit the purpose of the research adequately. Its aim is to provide a description of particular techniques applied and explanations relevant methods/techniques applied; what they mean and why. Simply put research methodology helps the researcher to specify in clear terms his decisions about the methods/techniques and procedure applied, what informs his/her decisions and why he/she selects them so that they can be assessed by others. Its aim is to give the research work a clearly defined plan. Hence this chapter is organized into the following thematic sections: paradigm, research methods, research design, population of study, sampling procedures, data collection procedures, data analysis strategies, validity and reliability of data collection instruments, ethical considerations and summary.

The purpose of this study is to assess extent of use of EIRs by doctoral students in two selected universities in South Africa and Nigeria in order to gain an understanding of the factors that influence their use and non-use of EIRs. The study seeks to determine the level of satisfaction that

the students derive from EIRs so as to ascertain if their information needs are adequately met with regards to their research work. An attempt was also be made to examine the relationship between extent of EIR use and satisfaction. Furthermore, the study seeks to explore the similarities and differences in the use pattern of doctoral students in Nigeria and South Africa. The study seeks to address the following specific research questions:

1. To what extent do doctoral students in both universities use EIRs?
2. Which are the students' most preferred EIRs?
3. How have EIRs affected the research of doctoral students in both universities?
4. What are the factors that influence the students' use of EIRs?
5. What competencies enable doctoral students in both universities to use EIRs and how did they acquire these skills?

## **4.2 Paradigm**

An understanding of the paradigm underpinning a study is crucial in the conduct of a research as it also allows others to be able to appraise the research. In any given research the development of knowledge is based on some set of philosophical assumptions about knowledge, values, reality and logic; and what research methods that are appropriate for the study. This philosophical assumption is known as a paradigm. According to Mertens (2005), a paradigm is way of viewing the world and it is composed of certain philosophical assumptions that guide and direct thinking and action. Mcgregor and Murnane (2010) describe a paradigm as a set of assumptions, concepts, values and practices that constitute a way of viewing reality for the community that shares them, especially in an intellectual discipline. Willis (2007) highlighted the following major components of a paradigm:

- clearly stated laws and theoretical assumptions;
- standard ways of applying fundamental laws to a various situation;
- instrumentation and instrumental methods that bring the laws of the paradigm to bear on the real world;
- general metaphysical principles that guide the research within the paradigm and
- general methodological prescriptions about how to conduct research within the paradigm.

Willis (2007) describes a paradigm as a comprehensive belief system, world view or framework that guides research and practice in a given field. Basically, there are three major paradigms in social science and information studies research namely positivist, post positivist and interpretive (Pickard, 2013; Gephart, 1999). Research paradigms have also been categorized into quantitative and qualitative, but this categorization has been contested as an oversimplification that is limited to data collection methods and analytical processes (Mcgregor and Murnane, 2010). For the purposes of this study, paradigms will be used to refer to the three views shaping information and social sciences research namely, positivist, post positivist and interpretive paradigms (Pickard, 2013; Gephart, 1999), while quantitative and qualitative paradigms will be used to refer to research approaches employed in the sense espoused by Johnson and Christensen (2004), Mcgregor and Murnane (2010) as well as Greene, Benjamin and Goodyear (2001).

#### **4.2.1 Positivist paradigm**

According to Gray (2004), the positivist paradigm is based on the assumption that the natural and human sciences share common logical and methodological principles that deal with facts hence advocate only the use of scientific observation as method of inquiry. Positivists maintain that people can only be positive that knowledge is true if it was created using scientific methods; hence it uses empirical methodology, which means data is derived through experiment and observation yielding valid and reliable evidence (Rohmann, 1999). To the positivist thinker, scientific knowledge is utterly objective and is the only form of knowledge that is valid, certain and accurate (Crotty, 1998). The positivist believes that scientific methods enable experimentation and measurement of what could be observed with the goal of discovering general laws to describe constant relationships between variables (Mertens, 2005). Basically the positivist is concerned with uncovering truth and presenting it by objective empirical methods and by using instruments of measurement that are independent of the researcher. Positivists employ scientific methods of enquiry and regulate the process of knowledge generation and use quantification to enhance precision in the description of parameters and the relationships among them. Furthermore, positivists believe that scientific knowledge is factual and ontologically and socially independent. In this way, positivist separate science from human beings who are seen as objects of study and controlled. This explains why most positivist studies are conducted in contrived settings and are far removed from the real world of lived experience.

As an essentially scientific research paradigm, the positivist paradigm seeks to investigate, confirm, and make predictions by testing hypotheses and theories. Research under this paradigm employs quantitative methodology with experimental methods to collect, analyze and interpret results which are generalized. Here the researcher controls the research and is isolated from it in the attempt to avoid biased interpretations of results and to ensure objectivity and reliability of the research. This paradigm is popular in the natural and physical sciences and also in the social sciences to a lesser extent. The strength of the positivist paradigm lies in its emphasis on objectivity, generalizability and the absence of bias because its instruments of measurement are independent of the researcher. However, it is criticized for its lack of subjectivity in interpreting social reality and for the notion that only observable phenomena may be studied (Gephart, 1999; Johnson and Christensen, 2004). Its emphasis on empirical and objective data is important but renders it inappropriate to studies such as the present one that involves an investigation of human behavior.

#### **4.2.2 Interpretive paradigm**

According to Pickard (2013), the interpretive paradigm strives to understand the entire context of the research at both the macro and micro environmental levels and employs qualitative methodology including dialectic interchange with participants and hermeneutics while depending on the tacit and explicit knowledge of the researcher. With the use of ethnographic methods of informal interviewing, participant observation and establishing sound ethical relationships, a trustworthy and authentic accounts of the cultural other is constructed and achieved (Peter and Milton, 2013). The interpretive paradigm is underpinned by observation and interpretation. The basic assumption guiding the interpretive paradigm are that knowledge is socially constructed by people active in the research process and that researchers should try to understand the complex world of lived in experience from the point of view of those who live it (Schwandt, 2000). It is believed that when people are placed in their social contexts, there is greater opportunity of understanding the perceptions they have of their own activities (Hussey and Hussey, 1997).

According to Gephart (1999), interpretivists assume that knowledge and meaning are acts of interpretation and that there is no objective knowledge independent of human thinking and

reasoning. Guba and Lincoln (1989) argue that interpretive studies attempt to understand phenomena through the meanings and interpretations that people ascribe to them. The interpretive paradigm focuses on the interaction between the researcher and the object of study and highlights the fact that the research is a product of the researcher's assessment. For this reason, it depends a lot on qualitative forms of data collection and analysis such as case studies, interviews and observations (Kaplan and Maxwell, 1994; Willis, 2007). The strength of interpretive research lies in the fact the researcher's intellect is deeply involved in the research while its weakness is over reliance on the researchers' skills, training, intellect, discipline and creativity which exposes the research to subjectivity (Joubish, Muhammed, Aijaz, Syeda and Kamal, 2011). These factors make it unsuitable in a study such as the present one in which objectivity is vital.

#### **4.2.3 Post-positivist paradigm**

The post-positivist paradigm originated as a critique of and opposition to the positivist paradigm. It is thus founded upon a fundamentally different philosophy in which the realist ontology, objective epistemology and value free axiology of positivism are rebutted and substituted with notions of enquiry underpinned by nominalism, subjectivism and omnipresent values (Rajasekar, Philominathan, and Chimnathambi, 2013). The post-positivist paradigm is based on the assumption that there are many ways of knowing other than the scientific method; rather than testing hypothesis, post-positivist research generates hypothesis through inductive reasoning; instead of trying to explain how something operates, researchers seek to either understand why it or people behave in the way they do (interpretation); or uncover relationships and structures (McGregor and Murnane, 2010). This presupposes that the stance of the post positivist researcher is in contrast with those of the positivist researcher who believes that through observations and manipulations accuracy and consistency can be achieved in the pursuit of knowledge. Therefore the belief that all forms of investigation or inquiry must follow a specific (scientific) procedure is rejected. According to O'Leary (2007) to the post positivist the world is vague, infinitely complex, erratic and open to numerous interpretations, thus it is not knowable and predictable. Bradley (1999) argues that the post positivist stance about the world is that man's understanding of it can never be complete or accurate, only loosely approximated, also that objects that exist cannot be fully apprehended through our methods of knowing, adding that the interaction of the knower and

the known influences the outcome of the research. By this the post positivist recognizes that man's understanding of the world obtained through observation is imperfect.

According to Guba (1990), post-positivists assume that reality can never be totally known and that efforts at understanding reality are limited owing to the limitations of human intellectual capacities. The post-positivist also believes that all observations are theory laden and that researchers are inherently biased by such things as cultural experiences and world views such that objectivity is not achievable but can only be approached (Trochim, 2006). In the view of the post-positivist, a research undertaking should be value laden, subjective and even intersubjective. However, Mertens (2005) made it clear that the importance of objectivity and generalizability is still upheld by the post positivists, but they recommend that the claims of understanding based on certainty be modified with probability. The place and the role of the researcher is fully recognized and he/she should participate as a central figure in the process. Within this paradigm McGregor and Murnane (2010) explain that humans are not just controlled and studied, they participate and even instigate and benefit from the research. Kerlinger (1986) is of the view that since methods cannot indemnify truth and since certainty is flawed, post-positivists perceive objectivity as an ideal through which science can function with the rigorous application of logical inquiry that is examined by a community of peers. Miller (2006) and Trochim (2006) argue similarly that because of the recognition of the fallibilities of scientific methods, the post- positivist researcher relies on the scrutiny of other scholars in order to improve and safeguard objectivity and to increase the knowledge base of their discipline. With the view that all human methods are fallible, the methodology of the post-positivist emphasizes the importance of multiple measures and observations in the process of inquiry, with each method possessing unique qualities/errors as well as the need to use triangulation across these methods at getting close to the truth (Trochim, 2006). Thus according to Tashakori and Teddlie (1998) post positivism prompted the use of multiple methods (mixed methods) in research inquiry. The rationale for the use of additional methods by post positivist researcher is based on the assumption that the choice of a research method is based on the types of research question posed by the research, with the view that each research approach can contribute to the understanding of a general research problem by addressing different specific research problems (Wildemouth, 1993).

Quantitative and qualitative methods, that is surveys, interviews, participant observations – are often involved in post-positivist research (Creswell, 2008). Tekin and Huseyin (2013) reiterate that the post-positivist research paradigm is a research approach that aims to gain in-depth understanding of the phenomenon under investigation by employing standardized research techniques (questionnaire), qualitative techniques such as interviews, observations and tape records to gather in-depth data. This paradigm allows the use of mixed methods research design which is a procedure for collecting, analyzing and combining both qualitative and quantitative research and methods in one study to gain better understanding of the ongoing research problem (Creswell, 2012). Inquiries or research within this paradigm can be for the purpose of seeking patterns and commonalities, uncovering underlying structures, revealing beliefs, relationships, cultures and traditions, interpreting and narrating experiences as well as exposing ideologies (Thorne, 2000). The strength of this paradigm lies in its ability to ensure trustworthiness, credibility, and transferability (Mcgregor and Murnane, 2010). Through the use of triangulation of methods, data and theories and modification, post positivism maintain quality standards of objectivity, validity and reliability (Taylor and Milton, 2006) based on one of its tenets that objectivity can be approximated by triangulating across various fallible views of knowledge. This is made possible by the focusing on the use of both descriptive and experimental methods of qualitative and quantitative approaches in a single study. However, post-positivism is criticized on the grounds that it is irrelevant and suggests that post positivism is “a swamp of ambiguity relativism and self-doubt which creates more problems to especially novice researchers than it solves (Lawlor, 1996). These limitations notwithstanding, Bradley (1999) points out that post-positivism demonstrates a high degree of internal consistency when carefully examined as the methodologies of science allows researchers to evaluate usefulness of research traditions leading to the achievements of some level of the notion of satisfactory usefulness. The post positivist paradigm adopted in this study since it allows the use of mixed method in a research. This paradigm has also been recognized as a leading paradigm for social science research in recent times (Pickard, 2013). It is compatible with survey research which has been adopted in this study.

### **4.3 Methodological approach**

Research methods are the various approaches, schemes and algorithms used in a research (Rajasekar, Philominathan and Chimnathambi, 2013). Bellamy (2012) defines research method as

a set of techniques accepted by most social scientists as appropriate for creating, collecting, coding, organising and analysing of data in the process of a research enquiry. It is a strategy of inquiry which progresses from philosophical assumptions underpinning a research to research design and data collection phase (Myers, 2009). Similarly, Sivasubramaniyan (2012) describes research methods as the techniques or methods a researcher employs in performing a research operation. Consequently, for the purposes of research, all available data and the unknown aspects of the research problem have to relate to each other. Johnson and Christensen (2004) gave an overview of the three main approaches to research namely quantitative, qualitative and mixed method.

#### **4.3.1 Quantitative methods**

Originally the quantitative research method was developed to study natural phenomena within the natural sciences (Hohman, 2006). Cohen and Manion (1980) describe quantitative research as the social science research that employs empirical methods and empirical statements in describing phenomena. According to them empirical statement is a descriptive statement expressed in numeric terms about what is the case in the real world rather than what to be. Shuttleworth (2008) describes quantitative research as scientific and it makes use of exclusively mathematical and statistical means to measure result. According to Creswell, (1994) quantitative research is explaining phenomena by collecting numerical data that are analysed using statistically based methods. Quantitative research involves the collection and analysis of quantifiable data (McCallister, .n.d); that is the data must be such that can be counted or mathematically calculated. According to Wyse (2011) quantitative research is used to quantify research problem(s) by generating numerical data or data that can be transformed into use statistically. It is used to quantify attitudes, opinions, behaviors and other defined variables and generalize results from a large sample population. This form of research uses measurable data to formulate facts and uncover patterns in a research. The characteristics of a quantitative research according to Johnson and Onwuegbuzie (2004) include deduction, confirmation, hypothesis/theory testing, explanation, prediction, standardized data collection and statistical analysis. Usually a large population is studied. The quantitative researcher strives for objectivity, and believes in a value free research. Hence the quantitative researcher usually alienates himself/herself from the phenomena or object under study. Taylor, (2000) explains that the quantitative researcher attempts to achieve objectivity by not allowing his personal interest and biases interfere with and influence the analysis and

interpretation of the data. Contrary to the view held by the qualitative purists, the qualitative researcher believes that an objective, value free and valid outcome can be attained (Johnson and Onwuegbuzie, 2004; Johnson and Christensen, 2004).

With the use of randomly selected samples, quantitative research uses questionnaires, surveys and experiments to collect data that is revised and tabulated in numbers, which allows the data to be presented with the use of statistical analysis (Hittleman and Simon, 1997). This form of research is useful in a study with large population. Its data collecting and analysis method are relatively quick (using statistical software) considering the large population usually involved (Johnson and Onwuegbuzie, 2004). In addition, the use of properly designed quantitative experiments helps to filter out external factors so that a biased free result is achieved. Also the separation of researcher from research object creates room for objectivity and validity of research outcome to a large extent. The weakness of quantitative research lies in its focus on laws, theories and hypothesis formulation and testing. The conditions for successfully confirming statistical results are very strict. Where there are ambiguities or some needs for a retest, a refinement of research design will be required; which means another investment of time and other resources which may be limited. Moreover, quantitative research focus on generating confirmed and unconfirmed results leaves little or no room for grey areas and doubt (Shuttleworth, 2008). Hence Taylor (2000) argues that quantitative research is unable to successfully evaluate the full range of human behavior which characterizes enquiries in the social sciences. For these reasons the use of quantitative research method solely for collect data for the present study is considered inadequate.

#### **4.3.2 Qualitative method**

The foundation of qualitative research lies in the advancement of interpretive view to social reality (Myers, 2000). Qualitative research is a type of social inquiry designed to help researchers gain understanding of people and the world (social and cultural context) they live in (Myers, 2000). Creswell (1994) defines qualitative research as a form of inquiry that employs distinct methodological traditions of inquiry that explores the social or human world. Within this context the enquirer conducts the study in a natural setting, builds a complex, holistic picture, analyzes words, and reports detailed views of participants. According to De Vos (2002), this form of research uses dialectic and interpretive methods as the researcher interacts with the participants

he/she strives to discover and interprets the participants' world by means of qualitative method. Denzin and Lincoln (2005) explain that a qualitative form of study involves the collection and use of a variety of empirical instruments which include case study, personal experience, introspective, life story, interview, observational, historical, international and visual texts that describe regular and challenging moments and meanings in participants' lives. The intent of the qualitative researcher is to understand the social realities of individuals, groups and culture by exploring their behaviors, perspectives, feelings and experiences and what lies at the centre of their lives. Usually, researchers such as ethnographers whose focus is the study of culture and customs; grounded theorists whose domain is the investigation of social processes and interaction; and phenomenologist who explore experiences, describes and interpret the social world (De Vos, 2002).

The main data sources for qualitative studies include observation and participant observation (field work), interviews, documents and texts, researcher's impressions as well as reactions and sometimes questionnaires (Myers, 2009). Data is derived directly through observation, both participant and direct in-depth interviews, group interviews, collection of relevant documents, photographs and video tapes, with researcher being the primary instrument of data collection and analysis (Joubish, Muhammed, Aijaz, Syeda and Kamal, 2011). Here the researcher/interviewer is at the centre of the research process. He/she fits into the situation, makes sense of the various discoveries and interprets them, as multiple realities unfold in the process of research, both the participants and researcher construct their own interpretation of the realities. The strength of the qualitative research lies in its capacity to involve the researcher. The researcher is an integral part of the research. He/she is the instrument of the inquiry, thus the research depends heavily on the full intellects, skills, training, discipline and creativity of the researcher (Joubish, Muhammed, Aijaz, Syeda and Kamal, 2011). The outcome of the research depends on the judgment and discipline of the researcher. Its critique stems from the over involvement of the researcher in the entire inquiry process. It creates room for subjectivity and bias in research outcome, jeopardizing its reliability and making it difficult to generalize (Koch, 1996) because it creates room for fabrications. Moreover because of its nature, it is time consuming and not economical. This qualitative research method alone may not be sufficient to achieve the desired purpose of this study for the above reasons.

### 4.3.3 Mixed methods

Mixed methods research is an approach to knowledge (theory and practice) that attempts to consider multiple viewpoints, perspectives, positions and standpoints, usually the qualitative and quantitative research standpoints (Johnson, Onwuegbuzie and Turner, 2007). Creswell (2003) defines mixed methods research as a research strategy that involves collecting and analysing both qualitative and quantitative data in a single study. Similarly, Johnson and Onwuegbuzie (2004) describe mixed research as involving the mixing or combining of quantitative and qualitative research techniques, methods, approaches, concepts or languages into a single study. Mixed method research is an approach to study phenomena that uses multiple data collection techniques to generate multiple data sets. A more comprehensive definition that incorporates all the features given by different authors is that of Creswell, Plano, Clark, Gutmann and Hanson (2003). They define mixed research as research that involves the collection or analysis of both qualitative and/or quantitative data in a one study in which the data collected concurrently or sequentially are given a priority, and involve the integration of the data at one or more stages in the process of research. The source of the mixed method research in scholarly literature can be traced to the early work of Campbell and Fiske (1959) on mixing research methods in a single study (Creswell, 2003; Johnson, Onwuegbuzie, and Turner, 2007; Creswell and Plano, 2007). Campbell and Fiske (1959) were accredited to have been the first to employ multiple research methods in the field of social science research which they termed “multiple operationalism”. They used more than one method in the process of validation to ensure that the variance explained gives the expected result of the underlying phenomenon (Johnson, Onwuegbuzie and Turner, 2007). Since then it has been increasingly applied in social sciences research. However, in its recent history mixed method research in the field of social sciences began with the discourse between the quantitative and qualitative purists claiming superiority of one method over the other (Johnson, Onwuegbuzie and Turner, 2007).

The outcome of the “paradigm wars” is the emergence of mixed methods research in the 1990s, a development that was established alongside quantitative and qualitative methods (Creswell and Plano-Clark, 2006; Johnson, Onwuegbuzie and Turner, 2007). Webb, Campbell, Schwartz and Sechrest (1966) introduced the term “triangulation” to explain the process of multiple operationalism used by Campbell and Fiske (1959) (Johnson, Onwuegbuzie and Turner, 2007).

According to Creswell (2003), the idea of triangulating data sources evolved out of the work of Campbell and Fiske (1959). Denzin (1994) thus defines triangulation as “the combination of methodologies in the study of the same phenomenon”. Jick (quoted in Creswell, 2003) also defines it as a process of seeking convergence across qualitative and quantitative methods.

Apart from the “paradigm war” as social sciences research advanced, researchers found more reasons to mix methods in the social sciences. As Greene and Caracelli (1997) have shown, the complex nature of social phenomena demands the use of different methods in research. In addition, all methods of data collection have their peculiar weaknesses such that the use of multiple methods can lead to the neutralization of some of the weaknesses of certain methods (Jick, 1983). In this way, the use of mixed methods in social science research strengthens a study (Greene and Caracelli, 1997). Mixed methods offer researchers the chance to answer research questions using combinations of questions. Its rejection of dogmatism allows researchers to make choices in line with what method(s) suits a study. It is expansive and creates room for creativity in research. Its pluralistic and complementary attributes suggest that researchers can take diverse approaches to the selection of methods and idea of how to carry out a study (Johnson and Onwuegbuzie, 2004). In this regard, Creswell, Plano, Gutman and Hanson (2007) have identified the following major types of procedures in mixed method research:

- Sequential explanatory design/procedure: This strategy involves the collection and analysis of quantitative data followed by the collection and analysis of qualitative data. Here priority is usually given to quantitative data, but both methods can be given equal priority. Integration is at the interpretation phase. The purpose is to use findings from one method to help explain, interpret, expand or conceptualize the finding from the other method.
- Sequential exploratory design/procedure: This involves the collection and analysis of qualitative data followed by collection and analysis of quantitative data. Emphasis is usually laid on the qualitative aspect, but it can also be equal or on the quantitative side and integration is at the phase of interpretation. Its purpose is to explore a phenomenon, expand on qualitative findings and to generalize qualitative findings to different samples.

- Sequential transformative design/procedure: Two data collection phases are involved in this process. Either type can precede the other. The researcher using this design is guided by a theoretical perspective or framework. Priority is given to either of the two methods (quantitative or qualitative) or both. Integration is during interpretation phase and the purpose is to allow researchers to use methods that suit their theoretical perspectives.
- Concurrent triangulation design/procedure: within this design qualitative and quantitative data are collected concurrently (at the same time). Only one data collection phase is used but data analyses are done separately yet concurrently. Priority is equal but can be given to either of the two types. The purpose is confirmation, corroboration or cross validation within the study and to develop an in depth understanding of a topic.
- Concurrent nested design/procedure: This design involves the collection of both qualitative and quantitative data and having one embedded or nested within the other. Priority is given to the primary data collection procedure which can be either quantitative or qualitative. Integration is at data analysis phase. The research may be guided by a theoretical perspective. The procedure creates room for the researcher to gain a broader perspective of study than could be gained from using a single data collection mode.
- Concurrent transformative design/procedure: This design involves two concurrent data collection phases. Priority may be given equally or on either of the two modes. Integration is usually at the phase of data analysis; it can also be during interpretation phase. Research is usually guided by a specific theoretical perspective. The purpose is to allow researcher use methods that best suit their theoretical perspectives.

According to Venkatesh, Brown and Hillol (2013), to develop an appropriate or workable mixed method design the researcher has to decide whether to operate largely within one dominant approach or to conduct the study phases concurrently or sequentially. This decision is informed by one or more of the five primary purposes identified by Greene, Caracelli and Graham (1989) namely, triangulation, complementarity, development, initiation and expansion. Triangulation seeks the convergence and corroboration of results from different methods used in studying the same phenomenon while complementarity seeking richness, enhancement, illustration and clarification of results from one method with results from the other method. In mixed methods the result obtained from one method is used to develop the other method that is using the result from

one method to help inform the other method. For their part, Initiation seeks to uncover paradoxes and contradictions that lead to a reframing of research questions while the purpose of expansion is to expand the scope and coverage of the study by employing different methods for different enquiry sections (Johnson, Onwuegbuzie and Turner, 2007).

According to the foregoing, the researcher's motive in most cases may not be explicit but where the motives are made clear, they usually fall within one or more of the five identified purposes. In addition to the purpose of a study, the choice of a mixed method research strategy depends on the following four criteria – implementation of data collection (that is whether the researcher will employ sequential, concurrent or transformative procedure in the process of data collection and analysis. the implementation decision calls for a clearly defined reason for collecting both forms of data and understanding the important interrelation between both data collection phases); priority (decision on which method will be emphasized more in the study. This depends on the purpose of the study. The researcher is required to make an informed decision on the priority given to either quantitative or qualitative method throughout the study); point at which data are integrated (this decision depends largely on the intent or purpose of the study). The researcher must have a clear picture of the stage at which data collected from both methods will be integrated and the form the interpretation will take. And in terms of theoretical perspectives, the researcher may be guided by a theoretical perspective which can be explicit or implicit within the study (Creswell, Plano, Gutmann and Hanson, 2007; Terrell, 2012).

Mixed methods can provide the opportunity for a greater assortment of divergent and/or complimentary viewpoints that allow the researcher to develop multifaceted and novel explanations to a phenomenon (Jick, 1983; Teddlie and Tashakkori, 2009). They offer new insights and forms of analysis that are not likely to be productive if only one method is used (Kaplan and Duchon, 1988). Similarly, Sechrest and Sidiana (1995) aver that mixed methods research has the potential to reduce the problems inherent in the use of singular methods. Acknowledging that all methods have their peculiar limitations, the proponents of mixed methods felt that the biases inherent in any single method could be neutralized or eliminated by the biases of other methods (Creswell, 2003). In addition, Johnson and Onwuegbuzie (2004) identified advantages of mixed method research as follows –

- It provides a thorough and clearer understanding of the research problems than either qualitative or quantitative methods.
- Can be used to provide broader and more complete answers to a range of research questions because researcher is not confined to one method.
- Provides a strong evidence for a conclusion through convergence and corroborating findings.
- Helps to explain findings or how causal processes work.

However, Bryman (2008) cautioned that the mixed method is new in social sciences research and that researchers should therefore use it with caution. In addition, Driscoll, Appiah-Yeboah, Salib and Rupert (2007) pointed out that the challenge of manipulating and reducing data collected and combining the two types of data can be daunting. The time and resources required might lead to compromise in sample size. Below are some other disadvantages highlighted by Johnson, Onwuegbuzie and Turner (200).

- Mixed method research is expensive and time consuming.
- It is difficult to find a researcher that is experienced in both quantitative and qualitative research.
- A researcher will have to learn how to use multiple methods for him/her to be able to mix methods effectively.
- Methodological purists do not believe that paradigms can be mixed, thus they insist that a researcher should use either quantitative or qualitative paradigm.

Terrell (2012) has outlined the following requirements for a researcher who wishes to undertake a mixed study:

- He/she should have some knowledge of the different research methods used.
- He/she should have an understanding of the assumptions underpinning the various methods used.
- The researcher should have knowledge of the analytical methods and tools related to both methods.

- The researcher should be willing to accept and aside methodological prejudice held from previous training and discipline.

Considering the benefits of mixed methods with respect to understanding and explaining complex organizational (institutional) and social phenomena (Venkatesh, Brown and Hilloo, 2013), researchers are advised to use different kinds of methods in social enquiries (Greene and Caracelli, 1997; Creswell, 2009).

Based on the above, the present study adopts a mixed methods approach research which involves the mixing of quantitative and qualitative research methods, approaches or other paradigm characteristics. The study adopts the concurrent mixed method approach as it is applicable to survey research and allows the harvesting of quantitative and qualitative data that permits a more comprehensive understanding of the research problem under investigation (Ivankova, Creswell and Clark 2007). This will help answer the research questions and proffer solution to the research problems. Interviews were used to collect data about the opinions and perceptions of library staff about doctoral students' use of EIRs while a survey questionnaire was administered to the students to inquire into the extent of their use of EIRs. The use of a mixed method approach allowed the harvesting of a variety of information regarding the extent of EIRs usage of doctoral students in the two universities under survey; using the result from the qualitative method (interview) to inform and develop the result obtained from the quantitative method (survey; questionnaire); to achieve high degree of validity and reliability (Sarantakos, 1998 in Ngulube, Koketso and Ndwandwe, 2009; Greene, Caracelli and Graham, 1989). In essence the use of mixed method research was for complimentary purposes. In mixed method research the complimentary relationship between the quantitative and qualitative data helps to bolster the effectiveness of the research because of the addition of a supplemental data set (Migiro and Magangi, 2011). Moreover, similar studies have used the mixed method research and attest to its effectiveness in proffering solution to research problems. For example, Gakibayo, Ikoja-Odongo and Okello-Obura (2013) applied mixed methods in the study of electronic information resources utilization by students in Mbarara University Library. Ramlogan and Ted (n.d) in a similar study of use and non-use of electronic information sources by undergraduates' employed the mixed method approach in analyzing data. Similarly, Naidoo and Jaya (2001) in a study of impact of digital divide on information literacy training employed the mixed method in data analysis. With the use of mixed

method Baro, Benake-Ebide Ubogu, (2010) investigated whether undergraduate students of the College of Health Sciences at Niger Delta University are information literate and to determine whether they are aware of and use the different information sources.

#### **4.4 Research design**

Research design can be described as a planned or clearly structured framework of how a researcher intends to conduct a research project in order to solve research problems and to contribute to knowledge (Babbie and Mouton, 2001). Creswell (2008) defines a research design as plans and procedures for research that include the decision from broad assumptions to detailed methods of data collection and analysis. Research design can also be seen as the plan according to which a researcher obtains research participants/objects and gather information from them with which he/she uses to reach or draws conclusions about the research problem (Welman, Kruger and Mitchell, 2010). In other words, the research design is the whole plan that spells out the type of data needed for the research, the method to be employed to gather and analyze the data that will be used to answer the research question. Research design has to be articulated in such a way that its components will be properly connected in the most effective way so as to produce the right answers to the research questions. Thus De Vos (2002) points out that research design provides a framework for the gathering of data from which the research questions will be investigated. Similarly, Leedy and Ormrod (2005) Trochim (2005) see it as the glue that holds the research project together. It is used to structure the research, to show how all of the major parts of the research project work together to try to address the central research question. Research design is the strategy to tackle a central research problem. The function of the research design is to provide a plan for the gathering, organizing, interpretation and integration of data whose outcome is the research findings. Mouton (2002) asserts that through a clear and well developed design, the researcher can develop confidence in the methods used as the researcher maximizes validity and minimizes error.

There are various research designs that can be used in social sciences research; these include experimental, historical, correlational and descriptive design (Blakstad, 2008; Muaz, 2013; Carroll, 1997) among others. The descriptive design has been identified as the most prevalent in social sciences inquiry (Babbie, 1992; Aggarwal, 2008 (in Salaria, 2012); Blakstad, 2008;

Shuttleworth, 2008; Yin, 2011). Also Creswell (2008) asserts that the selection of a suitable design is based on the nature of the research problem or issue being addressed by the study. Similarly, Bryman (2004) argues that a research design is a framework for generating evidences that suit the research questions which is of interest to the investigator. The design should utilize the techniques and procedures that best fit the research problem and give the most reliable and valid data. This study therefore adopts the descriptive survey method.

Aggarwal (2008), (in Salaria, 2012) describes the descriptive survey design as a method of research that is devoted to the gathering of information about prevailing conditions or situations for the purpose of description and interpretation. Shuttleworth (2008) describes the descriptive survey design as a systematic method which involves observing and describing the behavior of the object of being studied without influencing or manipulating it in any way. According to Neuman (2006), the descriptive survey is employed generally to gather background information on the behavior, attitude and belief of a large number of people. According to Babbie, Mouton, Vorster and Prozesky (2001), the descriptive survey is mostly used in social sciences inquiry to gather primary and empirical data through the use of questionnaire and interview. Hence Trochim (2001) argues that survey involves soliciting answers from subjects usually through questionnaires and interviews. This implies that surveys can be designed in the form of quantitative or qualitative methods. Also Best and Kahn (2006) argue that both qualitative and quantitative methods can be used in a survey research. In survey research participants are left to speak for themselves with little or no informed interpretation or exploration of the meaning behind their responses. Usually the best methods for collecting information that will demonstrate relationships and describe the world as it is or exists. It is used to provide information about the naturally occurring health status, behavior, attitudes or other characteristics of a particular group. It is also used to demonstrate associations or relationships between things in the world around us. It is concerned and designed to describe the existing distribution of variables without regards to causal or other hypotheses (Grimes and Schulz, 2002). Survey studies are factual and supply practical information because they employ applications of scientific method by critically analyzing and examining source materials, interpreting data thereby arriving at generalization and making predictions (Salaria, 2012).

This design is suited to this study's interest in the extent of EIRs use by doctoral students of South Africa and Nigeria. Moreover, it is popularly used in the study of information use pattern (Andrews and Pearce, 2005, Zaborowski, 2008) because it describes the situation and/or looks at the trends and patterns within the sample group that can be generalized to the defined population of the study (Pickard, 2013). This method was applied in Ozoemelem's (2009) study of the use of electronic resources by postgraduate students of the department of library and information science of Delta State University, Abraka, Nigeria which produced generalizable results.

#### **4.5 Population of study**

The target population for this research are doctoral students registered in the social sciences from 2014 and 2016 (who are in their second year and above) at UKZN and OAU respectively. First year doctoral students are excluded because they may not have made enough use of the libraries' resources and services for an in depth investigation such as this. The librarians in both university libraries who assist users in the access and use of EIRs are also included in the survey. At UKZN, they are referred to as subject librarians while at OAU they are referred to as librarians in charge of EIRs. The doctoral students in the school of social sciences at UKZN are 138 while subject librarians are four (4) (UKZN library website, 2015). For its part, OAU has 55 PhD students in the faculty of social sciences while the librarians in charge of EIRs are six (6). This category of librarians was chosen for the purpose of this study because they deal directly with library patrons in providing EIRs services.

#### **4.6 Sampling size and sampling procedure**

The sample comprised the entire population of PhD students from the Faculty of Social Sciences at OAU (55) and school of social sciences, Pietermaritzburg and Howard Campuses, UKZN (138), all their subject librarians in UKZN (4) and librarians in charge of EIRs OAU (6). This choice is based on the small size of their population and also because census survey data are more accurate and reliable than data collected from other sampling surveys (Bhanu, 2011). According to Israel (2013), the entire population (census) would have to be sampled in a small population of 200 or less in order to achieve a desired level of precision. This is supported by Curry (quoted in Yount, 2006) who suggested a 100% population for such small population sizes. The relative populations and sample sizes are presented in table below.

**Table 4.1 showing the population of the study**

University	Postgraduate Students	
	Population	Sample
UKZN	138	138
OAU	55	55
	Subject Librarians	
UKZN	4	4
OAU	6	6
<b>Total</b>	<b>N=203</b>	<b>N=203</b>

#### **4.7 Data collection procedures**

Survey questionnaires and interviews were simultaneously used to collect data. In-depth interviews were conducted with subject librarians to solicit their opinions and ideas on existing patterns of EIR use by doctoral students and possible ways to improve access and use by the students. The purpose of the interview was to complement the quantitative data that was generated from doctoral students. This was intended to add breadth and scope to the research given the importance of subject librarians and ICT staff in the processes by which students seek and retrieve information.

The survey questionnaires focused on the types and extent of EIR use, preferences, predictors of use and use competencies. The use of questionnaires as instrument of data collection is popular as it allows the collection of valid and reliable information that can be used to answer research questions (Busha and Harter, 1980). Moreover according to Kimchi, Polivka and Steveson (1991) information gathered from survey questionnaires can be used to validate responses that emerge from qualitative data collected by means of interviews. The questionnaire was administered personally by the researcher and was organized under six sections. The first section focuses on respondents' personal data such as field and year of study, age and sex while sections 2 – 6 covers issues raised in the research questions such as:

- Extent of electronic information resources (EIRs) use
- Electronic information resources (EIRs) preferred by doctoral students

- Effect of electronic information resources (EIRs) on doctoral students' research
- Factors that influence doctoral students' use of electronic information resources (EIRs)
- Computer competencies of doctoral students

#### **4.8 Reliability and validity of research instruments**

A pre-test was conducted before the actual test to ascertain the reliability of the instruments and the validity of the data before the final instrument was developed and administered. The result obtained from the pre-test were used to redefine and streamline the questions in the survey questionnaire and interview schedule. Validity and reliability are vital in every research undertaking. Ngulube (2005) avers that if research work lacks validity then it cannot contribute positively to an existing knowledge base. According to Hall and Hall (1996) the issue of validity is concerned with the degree to which the findings of a research accurately represent the reality of the situation. Hall and Hall therefore suggest that in any research undertaking a researcher should be guided by the value he/she attaches to the research findings. In order to achieve this, the researcher should ensure the research findings accurately represent what actually exists and whether the findings are valid (Hall and Hall, 1996). Pratt (1992) therefore suggests the pretesting of questionnaires, interview schedules or the use of pilot study can serve as a means of ensuring content validity as the questions will be checked whether they are relevant and would give the desired information.

The present study adopted the suggestion by Pratt (1996) and Sproull (1995). This method had also been used and attested to by Nsanzya (2003) who investigated the use of electronic library information resources for information searching and retrieval among staff at the Edgewood campus of the University of KwaZulu-Natal. In addition, the questionnaire and interview questions were validated by the research supervisor (Prof. Stephen Mutula) who is an expert in information studies. This is in line with Frankfort-Nachmias and Nachmias's (1996) argument that in social sciences research, experts' view on research instruments is considered as a measure of its validity.

#### **4.9 Data analysis**

The data was analyzed using content analysis. Content analysis is a technique used for making inferences by objectively and systematically identifying specified characters within a text (Kolbe

and Melissa, 1991). Quantitative data was analyzed using Statistical Packages for Social Sciences (SPSS). The choice of SPSS is based on the fact that it allows for easy manipulation of statistical data. It is also recommended for students and researchers in the social sciences because it contains an extensive range of univariate and multivariate procedures used in the social sciences (Landau and Brian, 2004, Peugh and Craig, 2005). All results are presented in charts and tables. Table 3 below shows research questions, data sources and data analysis strategies.

**Table 4.2 Mapping research questions to sources of data and data analysis strategies**

<b>Research questions</b>	<b>Source of data collection</b>	<b>Data analysis strategies</b>
To what extent do doctoral students in UKZN and OAU use EIRs?	Survey questionnaire and interview	Content analysis and SPSS
Which are the most preferred EIRs by doctoral students?	Survey questionnaire and interview	Content analysis and SPSS
How has EIRs affected the research work of doctoral students in both universities?	Survey questionnaire and interview	Content analysis and SPSS
What are the factors that influence use of EIRs by doctoral students?	Survey questionnaire and interview	Content analysis and SPSS
What competencies do doctoral students in both universities have to use EIRs and how did they acquire these skills?	Survey questionnaire and interview	Content analysis and SPSS

#### **4.10 Ethical considerations**

Ethical issues in a research undertaking is concerned with issues such as the protection of research participants; how to gain participants trusts; how to promote the integrity of the research; avoid impropriety that might affect their institution/organisations negatively and cope with problems that may arise in the course of the research (Israel and Hay, 2006). Research subjects should therefore be given a choice to determine whether to participate in a study or not (Taylor, 2000). Similarly Frankfort-Nachmias and Nachmias (1996) argue that a research undertaking which have humans as the participants, such research should be performed informed consent of the participants. Thus permission has been sought from the institutions under survey and the participants (doctoral students and library staff) have been informed that that their participation in the survey is voluntary. They are free to withdraw at any point of the study if they so wish.

The ethical codes of the University of KwaZulu-Natal and Obafemi Awolowo University respectively were fully complied with.

#### **4.11 Summary**

This chapter discussed the research methodology employed by the study. It started by giving a detailed explanation of the research paradigm (mixed method) that the study employed and the reason for this choice. Quantitative and qualitative approaches were employed to collect data with the use of survey questionnaires and interview. A census of the population was used as the population is small. The chapter was organized under eight themes, each providing details of different sections of the research methodology. The themes are paradigm, methodological approach research design, population of study, sampling size and sampling procedure, data collection procedures, reliability and validity of research instruments, data analysis and ethical considerations. The chapter to follow shall discuss and present the research results and the interpretation of findings.

## **CHAPTER FIVE**

### **DATA PRESENTATION AND ANALYSIS**

#### **5.1 Introduction**

This chapter presents the results of data collected survey questionnaire and interview schedule administered to PhD students and library staff of Obafemi Awolowo University (OAU), Nigeria and University of KwaZulu-Natal (UKZN), South Africa. The aim of the study was to investigate the extent of use of EIRs by social sciences doctoral students at the University of KwaZulu-Natal (UKZN) in South Africa and Obafemi Awolowo University (OAU) in Nigeria respectively. The results are presented, analyzed, and organized around the following research questions:

1. To what extent do doctoral students in UKZN and AOU use EIRs?
2. Which EIRs are most preferred by doctoral students?
3. How have EIRs affected the research projects of doctoral students in both universities?
4. What are the factors that influence use of EIRs by doctoral students?
5. What competencies do doctoral students in both universities have to use EIRs and how did they acquire these skills?

The results presented here are sub-divided into two sections: Section one is composed of data collected from doctoral students using survey questionnaire and section two contains results collected through semi-structured interview from ICT staff and subject librarians. The quantitative data are used to generate descriptive statistics and the results are presented using frequency tables and cross-tabulations. The results are presented in sections 5.2 and 5-3 as well as the chapter summary in section 5.4.

#### **5.2 Response rate**

A total of 193 copies of the questionnaire were distributed to doctoral (PhD) students of social sciences in Obafemi Awolowo University (OAU), Nigeria and University of KwaZulu-Natal, (UKZN), South Africa. A total of 134 questionnaires were completed and returned out of which 130 (OAU-48 and UKZN-82) were found useful for the purpose of the study, giving a response rate of 87.3% and 59.4% for OAU and UKZN respectively. Ten librarians (4 subject librarians and 6 ICT staff) were expected to participate in the semi-structured interview from OAU and UKZN

libraries. As at the time of the interview 2 members of staff from OAU library were on leave and could not be reached to participate in the interview. Consequently, only 4 ICT staff members and 4 subject librarians were interviewed from OAU and UKZN libraries respectively. The response rate of subject librarians and ICT staff are 66.7% and 100% respectively. An average response rate of 68% obtained from the students and librarians in this study is considered good for a study of this nature as suggested by Babbie and Mouton (2001). Babbie and Mouton explain that for a survey analysis, a response rate of 70% is considered excellent, 60% is considered good while 50% is taken as adequate. A detailed breakdown of the response rate is presented in table 5.1. The overall response rate is 68% as depicted in table 5.1.

**Table 5.1 Response rates N = 203**

<b>Respondents</b>	<b>Institution</b>	<b>Data collection tools</b>	<b>Expected respondents</b>	<b>Actual respondents</b>	<b>%</b>
<b>Doctoral students</b>	OAU	Questionnaire	55	48	87.3
	UKZN	Questionnaire	138	82	59.4
<b>Subject librarians/ICT staff</b>	OAU	Semi-structured interview	6	4	66.7
	UKZN	Semi-structured interview	4	4	100
<b>Total</b>			203	138	68

**Source: Field data (2016/2017)**

Table 5.1 shows that 55 and 138 respondents from OAU and UKZN respectively were targeted for the survey questionnaire while only 48 and 82 responded, giving a response rate of 87.3% and 59.4% respectively. It can be seen that more social science doctoral students from OAU participated in the survey compared to social science doctoral students from UKZN.

### **5.2.1 Results of survey questionnaire**

The results are presented under the following subheadings: demographics, extent of EIR use, EIRs preferred by social science doctoral students, effects of EIRs on doctoral students' research, factors that influence doctoral students' use of EIRs, EIR use competencies of doctoral students, and the need to provide support to the students in the use of EIRs.

## 5.2.2 Demographics of doctoral students

The demographic information provided in this study cover discipline and level of study. The results presented in table 5.2 shows the distribution of respondents according to their institutions and disciplines.

**Table 5.2 Distribution of respondents by institution and discipline N = 193**

DISCIPLINE	OAU (n=55)		UKZN (n=138)		TOTAL (N=193)	
	Frequency	%	Frequency	%	Frequency	%
Anthropology	-		10	7.7	10	7.7
Conflict, transformation and peace studies	-	-	9	6.9	9	6.9
Cultural and heritage tourism	-	-?	6	4.6	6	4.6
Economics	6	4.6	-	-	6	4.6
Economic history and dev. Studies	-	-	2	1.5	2	1.5
Gender studies	-	-	6	4.6	6	4.6
Geography	5	3.8	-	-	5	3.8
History	-	-	3	2.3	3	2.3
Information studies	-	-	10	7.7	10	7.7
International relations	-	-	4	3.1	4	3.1
Industrial organization and labour studies	-	-	3	2.3	3	2.3
Political science	19	14.6	14	10.8	33	25.4
Politics philosophy and economics	8	6.2	-	-	8	6.2
Public policy	-	-	9	6.9	9	6.9
Psychology	4	3.1	-	-	4	3.1
Sociology and anthropology	6	4.6	-	-	6	4.6
Sociology	-	-	6	4.6	6	4.6
TOTAL	48	36.9	82	63.1	130	100

Note: frequency is the total number of responses received from the targeted sample (n=193) for the questionnaire survey from OAU and UKZN respectively. The use of the dash sign (-) signifies

zero (0) or zero percent (0%). The letter F is used in place of frequency and % in place of percentage.

Table 5.2 shows that 17 disciplines were represented in the survey. The highest number of respondents are from the department of Political Science, 33 (25.4%) followed by the departments of Anthropology and Information Studies which accounted for 10 (7.7%) respondents each. The departments of Conflict and Transformation as well as Peace and Public Policy have 9 (6.9%) respondents each while Politics, Philosophy and Economics has 8 (6.2%) respondents. Five disciplines each had 6 (4.6) respondents. They are Cultural and Heritage Tourism, Economics, Sociology and Anthropology, Gender Studies and Sociology. In addition, 5 (3.8%) respondents were from the department of Geography while the department of International Relations and Psychology were represented by 4 (3.1%) respondents each. The departments of History and Industrial Organization and Labour Studies were represented by 3 (2.3%) participants each with Economic History and Development Studies accounting for the smallest number of respondents with 2 (1.5%) each. This shows that UKZN has higher representation in terms of number of disciplines. It can also be seen that there is little similarity in the social science courses offered at PhD level in both institutions. Political Science is offered in both institutions, Anthropology and Sociology are offered as a single discipline at OAU while UKZN offers Anthropology and Sociology as two separate disciplines.

**Table 5.3 Distribution of respondents according to level of study N = 130**

LEVEL OF STUDY	OAU		UKZN		TOTAL	
	Frequency	%	Frequency	%	Frequency	%
Year 2	13	10	39	30	52	40
Year 3	15	11.5	38	29.2	53	40.8
Year 4 and above	20	15.4	5	3.8	25	19.2
<b>Total</b>	48	36.9	82	63.1	130	100

The result presented in table 5.3 shows that more responses were received from doctoral students who are in their third year (53, 40.8%) which are slightly higher than the responses received from second year doctoral students which are (52) 40%. Year 4 and above had the least responses 25 (19.2%). It can also be seen from the table that within the institutions majority of the respondents (20, 15.4%) from OAU fall within year 4 and above category where as UKZN has only 5 (3.5%). From this result it can be assumed that majority of the social sciences doctoral students at OAU

may be encountering challenges that have prevented them from completing their studies within record time.

### 5.2.3 Extent of electronic information resources (EIRs) use (RQ1)

The extent of EIR use among social science doctoral students in the institutions surveyed is measured against certain parameters. This is only possible if there is evidence of students' exposure to information technology infrastructure or tools and EIRs either at institutions or at home or work. Invariably, EIRs use or any item depends on the availability of the item. EIRs cannot be accessed and used without information technology infrastructures/tools. The students were therefore asked to identify the facilities and resources available to them. These are presented in tables 5.4 and 5.5 below respectively.

**Table 5.4 IT infrastructures/tools available to doctoral students at institution's library N=130**

IT INFRASTRUCTURE/TOOLS	OAU N=48		UKZN N=82		TOTAL=130	
	F.	%	F.	%	F.	%
Computer at university library	42	87.5	48	58.5	90	69.2
Personal computer/laptop	42	87.5	65	79.3	107	82.3
Personal cable modem	3	6.3	18	22	21	16.2
Personal card reader	9	18.8	7	8.5	16	12.3
CD-ROM at university library	26	54.2	16	19.5	42	32.3
CD/DVD player at university library	6	12.5	11	13.4	17	13.1
Personal disk drive	10	20.8	20	24.4	30	23.1
Personal E-reader	11	22.9	13	15.9	24	18.5
Personal external hard drive	31	64.6	42	51.2	73	56.2
Personal flash drive	37	77.1	64	78	101	77.7
Laptop at home/work place/university library	-	-	27	32.9	27	20.8

The first research question concerns the extent of EIR use among doctoral students at the two institutions surveyed. Respondents were provided with a list of information technology (IT) infrastructure/tools to indicate what is available to them privately or in their institution's library. The results presented in Table 5.5 indicate that computers, personal laptops and CD-ROMs are

available to the majority of the respondents either in their university libraries or at home/work. The survey results show the availability of computer at university library, personal laptops and personal flash drive was 69% (90), 82.3% (107) and 77.1% (101) respectively. Further analysis reveals that 87.5% of OAU students confirm the availability of computers at the OAU library and 87.5% say they own their personal laptops. For UKZN students, the figures are 58.5% and 79.3% respectively. It is significant to note that the 27 (20.8%) respondents who indicated the availability of laptops both at home/work place and in the university library are from UKZN. The following are the percentages of respondents who confirmed the availability of the respective facilities – personal disk drives (23.1%); personal e-reader (18.5%); personal cable modem (16.2%); CD/DVD player at university library (13.1%); and personal card reader (12.3%). From the result presented in Table 5.4 it will not be inappropriate to state that relevant IT facilities are available to social science doctoral students of OAU and UKZN although to varying degrees.

**Table 5.5 Electronic information resources (EIRs) available at institutions' library N = 130**

Electronic information resources (EIRs)	YES			NO			UNSURE		
	OAU F. %	UKZN F. %	Total F. %	OAU F. %	UKZN F. %	Total F. %	OAU F. %	UKZN F. %	Total F. %
OPAC	17 35.4	45 54.9	62 47.7	2 4.2	1 1.2	3 2.3	29 60.4	36 43.9	65 50
E-book	43 89.6	73 89	116 89.2	3 6.3	4 4.9	7 5.4	2 4.2	5 6.1	7 5.4
E-journals	43 89.6	76 92.7	119 91.5	3 6.3	3 3.7	6 4.6	2 4.2	3 3.7	5 3.8
E-journals databases	35 72.9	73 89	108 83.1	4 8.3	4 4.9	8 6.2	9 18.8	5 6.1	14 10.8
CD-ROM databases	5 10.4	29 35.4	34 26.2	11 22.9	6 7.3	17 13.1	32 66.7	47 57.3	79 60.8
Abstract to articles in e-journal	37 77.1	68 82.9	105 80.8	5 10.4	5 6.1	10 7.7	6 12.5	9 11	15 11.5
Full-text of articles in e-journal	38 79.2	70 85.4	108 83.1	5 10.4	4 4.9	9 6.9	5 10.4	8 9.8	13 10
Online databases	31 64.6	73 89	104 80	7 14.6	4 4.9	11 8.5	10 20.8	5 6.1	15 11.5

E-newspapers	6 12.5	38 46.3	44 33.8	10 20.8	8 9.8	18 13.8	32 66.7	36 43.9	68 52.3
E-conference papers	13 27.1	32 39	45 34.6	8 16.7	10 12.2	18 13.8	27 56.3	67 51.5	67 51.5
E-research reports	14 29.2	49 59.8	63 48.5	5 10.4	8 9.8	13 10	29 60.4	25 30.5	54 41.5
E-theses, dissertation	27 56.3	73 89	100 76.9	8 16.7	3 3.7	11 8.5	13 27.1	6 7.3	19 14.6
E-data archives	17 35.4	44 53.7	61 46.9	11 22.9	4 4.9	15 11.5	20 41.7	34 41.5	54 41.5

Table 5.5 above shows responses to the question of the availability of EIRs at the OAU and UKZN libraries: e-journals (91.5%), e-books (89.2%), e-journals databases (83.1%), abstracts to articles in e-journals (80.8%) and full text of articles in e-journals (83.1%). The scores are comparable among respondents within and between the institutions. Online databases, e-theses/dissertation, e-research reports and OPAC were also reported by many respondents to be available (80%, 76.9%, 63%, 62% respectively). The lowest scores are for e-data archives (46.9%), e-conference papers (34.6%), e-newspapers (33.8%) and CD-ROM databases (26.2%). The findings from the table revealed that most of the respondents are unsure of the availability of some important EIRs such as OPAC (50%), e-research reports (54%), e-data archives (54%). This is a matter of concern considering the importance of these resources in electronic information search. The analysis reveals the high presence of EIRs in both institutions libraries with slightly different percentages. It is nevertheless established that the doctoral students at OAU and UKZN confirmed the availability of EIRs in their institutions' libraries. It was unexpected though to discover that a lot of social science doctoral students are unsure of the availability of important resources like OPAC, e-research reports, e-data archives which are relevant sources of information.

#### **5.2.4 Social science doctoral students' perception of electronic information resources (EIR) use**

The analysis of respondents' perceptions of their levels of EIRs use are presented in Tables 5.6a and 5.6b respectively. Table 5.6a presents a general analysis of the frequency of EIR use.

**Table 5.6a Frequency of EIRs use according to institution and level of study N = 130**

Frequency of EIRs use		OAU N=48				UKZN N=82			
		Year2	Year3	Year4	Total	Year2	Year3	Year4 and above	Total
<b>Daily</b>	F.	3	2	3	8	33	33	5	71
	%	6.3	4.2	6.3	16.7	40.2	40.2	6.1	86.6
<b>At least once a week</b>	F.	6	3	6	15	6	2	-	8
	%	12.5	6.3	12.5	31.3	7.3	2.4	-	9.8
<b>At least once a month</b>	F.	3	8	8	19	-	3	-	3
	%	6.3	16.7	16.7	39.6	-	3.7	-	3.7
<b>At least once in 6 months</b>	F.	1	1	3	5	-	-	-	-
	%	2.1	2.1	6.3	10.4	-	-	-	-
<b>Never</b>	F.	-	1	-	1	-	-	-	-
	%	-	2.1	-	2.1	-	-	-	-
<b>Total</b>	F.	13	15	20	48	39	38	5	82
	%	27.1	31.3	41.7	100	47.6	46.3	6.1	100

It can be seen from Table 5.6a that the majority of the respondents (71, 86.6%) are ardent users of EIRs. A close examination of the result reveals that students in their third and second years have similar frequencies of EIRs use as both levels recorded 40% and 40.8% in their daily EIR use respectively. Another interesting discovery is that most respondents (71, 86.6%) from UKZN make use of EIRs daily compared to only 19,39.6% of OAU students. Evidently, from the results UKZN doctoral students make extensive use of EIRs than their OAU counterpart.

**Table 5.6b Respondents distribution of Frequency of EIRs use at institution level N = 130**

FREQUENCY OF USE	Daily		At least once a week		At least once a month		At least once in 6 months		Never		Total	
	F	%	F	%	F	%	F	%	F	%	F	%
<b>OAU</b>	8	19.4	15	31.3	19	39.6	5	3.8	1	2.1	48	100
<b>UKZN</b>	71	86.6	8	9.8	3	3.7	0	0	0	0	82	100
<b>Total</b>	79	60.8	23	17.7	22	16.9	5	3.8	1	0.8	13	100

### 5.2.5 Information resource format mostly used by social science doctoral students for theses writing

This question aims to find out the format of information resources social science doctoral students from UKZN and OAU use most for their theses writing. Tables 5.7a, b below presents the analysis of respondents' responses.

**Table 5.7a Information format used mostly for thesis writing N = 130**

Institution	Printed information resources		Electronic information resources		Both of them		Total	
	F.	%	F.	%	F.	%	F.	%
OAU	36	27.7	2	1.5	10	20.8	48	36.9
UKZN	15	11.5	33	25.4	34	26.2	82	63.1
<b>Total</b>	51	39.2	35	26.9	44	33.8	130	100

The table shows that 33; 25% of the respondents from UKZN use EIRs extensively for their thesis writing while 36; 27% of their counterparts from OAU use the printed format more frequently. The respondents' responses to format mostly used for thesis writing is analyzed according to level of study in Table 5.7b which shows that for OAU, the use of printed information resources scored highest for 4<sup>th</sup> year students (15; 31.3%) followed by 25% (12) for 2<sup>nd</sup> year students. In the case of UKZN, the highest score is in the use of both formats (23.2% [19]) for 2<sup>nd</sup> year respondents followed by EIRs with 18; 3% (15) for 3<sup>rd</sup> and 2<sup>nd</sup> year respondents. The result at the level of years of study reveals that more UKZN students (34; 41.5%) use both formats printed and electronic information resources whereas OAU students (36, 75%) prefer printed information more.

**Table 5.7b information format used mostly for thesis writing N = 130**

EIRs	Format of information resources used for thesis writing							
	OAU N=48				UKZN N=82			
	Year 2 F. %	Year 3 F.%	Year 4 F.%	Total F.%	Year 2 F.%	Year 3 F.%	Year 4 F.%	Total F.%
<b>Printed information resources</b>	12 25	9 18.8	15 31.3	36 75	5 6.1	10 12.2	- -	15 18.3

<b>Electronic information resources</b>	-	1 2.1	1 2.1	2 4.2	15 18.3	15 18.3	3 3.7	33 40.2
<b>Both of them</b>	1 2.1	5 10.4	4 8.3	10 20.8	19 23.2	13 15.9	2 2.4	34 41.5
<b>Total</b>	13 27.1	15 31.3	20 41.7	48 100	39 47.6	38 46.4	5 6.1	82 100

### 5.2.6 Electronic information resources (EIRs) preferred by doctoral students (RQ2)

The question asks the type of EIRs social science doctoral students prefer most by examining the frequency with which they used them. Table 5.8 presents the analysis of the result.

**Table 5.8 Types of EIRs frequently used by respondents N= 130**

Frequency of use	OAU N=48				UKZN N=82 N=130				Total
	Year2 F.%	Year3 F.%	Year4 F.%	Total F.%	Year2 F.%	Year3 F.%	Year 4 & above F.%	Total F.%	
<b>Very frequently</b>	-	-	-	-	35; 49.3	32; 42.7	4; 8.3	71; 86.6	
<b>Frequently</b>	4; 8.3	5; 10.4	5; 10.4	14; 29.2	4; 4.8	5; 6.1	1;10	10;12. 2	
<b>Sometimes</b>	6; 12.5	7; 14.6	13; 27.1	26; 54.2	-	--	--	--	
<b>Infrequently</b>	3; 6.3	3; 6.3	2; 4.2	8; 16.7	-	-	-	-	
<b>Never</b>	-	-	-	-	-	1; 1.2	1; 1.2	2; 2.4	
	<b>THE INTERNET</b>								
<b>Very frequently</b>	-	-	-	-	6; 7.3	13; 15.9	1; 1.2	20; 23.4	

<b>Frequently</b>	1; 2.1	2; 4.2	3; 6.3	6; 12.5	18; 22	9; 11	-	27; 32.9
<b>Sometimes</b>	6; 12.5	6; 12.5	8; 16.7	20; 41.7	8; 9.8	12; 14.6	2; 2.4	22; 26.8
<b>Infrequently</b>	6; 12.5	6; 12.5	9; 18.8	21; 43.8	6; 7.3	3; 3.7	2' 2.4	11;13. 4
<b>Never</b>	-	1; 2.1	-	1; 2.1	1; 1.2	1; 1.2	-	2; 2.4
<b>E-BOOKS</b>								
<b>Very frequently</b>	-	-	-	-	22; 26.8	20; 23.4	-	22; 26.8
<b>Frequently</b>	3; 6.3	2; 4.2	3; 6.3	8; 16.7	13; 15.9	12; 14.6	2; 2.4	27; 32.9
<b>Sometimes</b>	5; 10.4	7; 14.6	9; 18.8	21; 43.8	4; 4.8	6; 7.3	3; 3.7	10; 12.2
<b>Infrequently</b>	5; 10.4	5; 10.4	8; 16.7	18; 37.5	-	-	-	-
<b>Never</b>	-	-	-	-	-	-	-	-
<b>E-JOURNAL</b>								
<b>Very frequently</b>	-	-	-	-	14; 17.1	16; 19.5	1; 1.2	31; 37.8
<b>Frequently</b>	3; 6.3	2; 4.2	2; 4.2	7; 14.6	13; 15.9	7; 8.5	1; 1.2	21; 25.6
<b>Sometimes</b>	1; 2.1	2; 4.2	7; 14.6	10; 20.8	10; 12.2	8; 9.8	2; 2.4	20; 23.4
<b>Infrequently</b>	9; 18.8	9; 18.8	11; 22.9	29; 60.4	1; 1.2	4; 4.8	1; 1.2	6; 7.3
<b>Never</b>	-	2; 4.2	-	2; 4.2	1; 1.2	3; 3.7	-	4; 4.8
<b>E-JOURNALS DATABASES</b>								
<b>Very frequently</b>	-	-	-	-	1; 1.2	4; 4.8	-	5; 6.1
<b>Frequently</b>	-	-	-	-	5; 6.1	1; 1.2	1; 1.2	7; 8.5
<b>Sometimes</b>	1; 2.1	-	1; 2.1	2; 4.2	3; 3.7	6; 7.3	-	9; 11

<b>Infrequently</b>	3; 6.3	4; 8.3	6; 12.5	13; 27.1	10; 12.2	5; 6.1	2; 2.4	17; 20.7
<b>Never</b>	9; 18,8	11; 22.9	13; 27.7	33; 68.7	20; 23.4	22; 26.8	2; 2.4	44; 53.7
	<b>CD-ROM Databases</b>							
<b>Very frequently</b>	-	-	-	-	14; 17.1	18; 22	-	32; 39
<b>Frequently</b>	-	-	2; 4,2	2; 4.2	13; 15.9	6; 7.3	1; 1.2	20; 23.4
<b>Sometimes</b>	5; 10,4	6; 12.5	10; 20.8	21; 43.8	10; 12.2	8; 9.8	2; 2.4	20; 23.4
<b>Infrequently</b>	8; 16.7	7; 14.6	7; 14.6	22; 45.8	1; 1.2	5; 6.1	1; 1.2	7; 8.5
<b>Never</b>	-	2; 4.2	1; 2.1	3; 6.3	1; 1.2	1; 1.2	1; 1.2	3; 6.3
	<b>Library's e-resources</b>							

The responses to the frequency of use of the listed types of EIRs were used to gain insight into the EIRs preferred by the respondents. The result shows that the internet ranked highest (71; 86.6%) followed by e-journals (42; 51.2%), e-journal databases (31; 37.8%) and library electronic resources (32; 39%) among UKZN respondents. For the OAU respondents, the majority who used the internet (26; 54.2%) do so sometimes, while only 14 (29.2%) use it very frequently. The analysis indicates that respondents prefer the internet and library's electronic resources, although respondents from OAU only use the resources occasionally.

The result further reveals that important EIRs such as e-books, e-journals, e-journal databases and library's electronic resources which recorded high use among OAU respondents are used infrequently. Many respondents use e-books (20; 41.7%), e-journals (21; 43.8%), library's electronic resources (21; 43.8%) occasionally, while those never used are e-journal databases, library electronic resources and e-books at 29 (60.4); 22 (45.8) and 21 (43.8) respectively.

### **5.2.7 Effect of EIRs on doctoral students' research (RQ3)**

The third research question investigates the effects of EIRs on the research of social science doctoral students at OAU, Nigeria and UKZN, South Africa. Respondents were required to

indicate the extent to which they agree or disagree with statements relating to the effect of EIRs on their specific doctoral research. The responses are analyzed and presented in Tables 5.8 and 5.9 below.

**Table 5.9 EIRs access and use enhance the quality of my research N = 130**

<b>EIRs access and use enhance the quality of my research</b>						
	<b>Institutions</b>	<b>Year 2 F. %</b>	<b>Year 3 F, %</b>	<b>Year 4 &amp; above F. %</b>	<b>Total F. %</b>	<b>Total N=130 F.%</b>
<b>Strongly agree</b>	<b>OAU</b>	2; 4.2	2; 4.2	-	4; 8.4	57;
	<b>UKZN</b>	23; 28.1	25; 30.5	4; 4.9	53; 64.6	43.9
<b>Agree</b>	<b>OAU</b>	8; 16.7	9; 18.8	12; 25	29; 60.4	55;
	<b>UKZN</b>	14; 17.1	12. 14.6	-	26; 31.7	42.3
<b>Neutral</b>	<b>OAU</b>	1; 2.1	1; 2.1	5; 10.4	7; 14.6	9;
	<b>UKZN</b>	2; 2.4	-	-	2; 2.4	6.9
<b>Strongly disagree</b>	<b>OAU</b>	-	1; 2.1	-	1; 2.1	9;
	<b>UKZN</b>	-	-	-	-	6.9
<b>Disagree</b>	<b>OAU</b>	2; 4.2	2; 4.2	3; 6.3	7; 14.6	8;
	<b>UKZN</b>	-	1; 1.2	-	1; 1.2	6.2
	<b>UKZN</b>	-	-	-	-	

Table 5.9 reveals that majority of the respondents confirmed that EIR access and use enhanced the quality of their research. Respondents who indicated ‘strongly agreed’ and ‘agreed’ constitute 86.2% (112) of the sample, those who indicated ‘neutral’ and ‘strongly disagree’ were 9 (6.9%) each and those ‘disagree’ were 8 (6.8%). Another look at the results reveals some differences in the responses of OAU and UKZN respondents in the sense that the percentage of respondents who strongly agree and agree in UKZN (96.3%) is higher than those from OAU (68.8%). Also, whereas 14.6% of OAU respondents disagree with the statement only 1.2% from UKZN disagreed. It can be said from the results that majority of the respondents share the view that EIRs enhance their research.

**Table 5.10 EIR access and use promote efficiency and effectiveness in my research work N = 130**

<b>EIRs access and use promote efficiency and effectiveness in my research work</b>						
	<b>Institutions</b>	<b>Year 2 F. %</b>	<b>Year 3 F. %</b>	<b>Year 4 &amp; above F. %</b>	<b>Total F. %</b>	<b>Total N=130 F. %</b>
<b>Strongly agree</b>	<b>OAU</b>	-	-	-	-	41;
	<b>UKZN</b>	15; 18.3	23; 17.7	3; 3.7	41; 50	31.5
<b>Agree</b>	<b>OAU</b>	1; 2.1	2; 4.2	-	3; 6.3	34;
	<b>UKZN</b>	18; 22	11; 13.4	2; 2.4	31; 37.8	26.2
<b>Neutral</b>	<b>OAU</b>	-	-	-	-	6;
	<b>UKZN</b>	4; 4.8	2; 2.4	-	6; 7.3	4.6
<b>Strongly disagree</b>	<b>OAU</b>	1; 2.1	2; 4.2	6; 12.5	9; 18.8	10;
	<b>UKZN</b>	1; 1.2	-	-	1; 1.2	7.7
<b>Disagree</b>	<b>OAU</b>	11; 13.4	11; 13.4	14; 17.1	36; 75	38;
	<b>UKZN</b>	-	2; 2.4	-	2; 2.4	29.2
<b>I am not sure</b>	<b>OAU</b>	-	-	-	-	1;
	<b>UKZN</b>	1; 1.2	-	-	1; 1.2	0.8

Responses to the question. This table shows that majority of the respondents from OAU either strongly disagree or disagree that EIR use can improve efficiency in research whereas the majority of UKZN respondents strongly agreed and agreed

### **5.2.8 Social science doctoral students' attitudes towards EIRs**

The following statements pertain to the attitudes of OAU and UKZN social science doctoral students towards EIRs. The responses to the statement “the standard of my research will suffer without EIRs” are analyzed and presented in Table 5.11 below.

### **5.11 The standard of my research will suffer without EIRs N = 130**

<b>The standard of my research will suffer without EIRs</b>
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	Institutions	Year 2 F. %	Year 3 F. %	Year 4 & above F. %	Total F. %	Total N=130 F. %
<b>Strongly agree</b>	<b>OAU</b>	-	-	-	-	55;
	<b>UKZN</b>	25; 30.5	26; 31.7	4; 4.9	55; 67.1	42.3
<b>Agree</b>	<b>OAU</b>	2; 4.2	2; 4.2	-	4; 8.4	20;
	<b>UKZN</b>	8; 9.8	7; 8.5	1; 1.2	16; 19.5	15.4
<b>Neutral</b>	<b>OAU</b>	4; 8.3	5; 10.4	5; 10.4	14; 29.2	19;
	<b>UKZN</b>	3; 3.7	2; 2.4	-	5; 6.1	14.6
<b>Strongly disagree</b>	<b>OAU</b>	1; 2.1	1; 2.1	2; 4.2	4; 8.4	7;
	<b>UKZN</b>	2; 2.4	1; 1.2	-	3; 3.7	5.4
<b>Disagree</b>	<b>OAU</b>	6; 12.5	7; 14.6	13; 27.1	26; 54.2	28;
	<b>UKZN</b>	-	2; 2.4	-	2; 2.4	21.5
<b>I am not sure</b>	<b>OAU</b>	-	-	-	1; 2.1	2;
	<b>UKZN</b>	1; 1.2	-	-	1; 1.2	1.5

From the table above it can be seen that no OAU respondent strongly agreed with this statement with only 4 (8.4) agreeing. Most OAU respondents disagree (26; 54.2%) and strongly disagree (4; 8.4%) with the statement while 67.1% (55) and 19.5% (16) of UKZN respondents strongly agree and agree respectively. Furthermore, only an insignificant percent strongly disagreed (3.7%) and disagreed (2.4%). It can be inferred therefore that UKZN social science doctoral students have a more positive attitude towards EIRs than their OAU counterparts.

**Table 5.12 It is important for a university to have EIRs N = 130**

<b>It is important for a university to have EIRs</b>						
	Institutions	Year 2 F. %	Year 3 F. %	Year 4 & above F. %	Total F. %	Total N=130 F. %
<b>Strongly agree</b>	<b>OAU</b>	3; 6.3	1; 2.1	2; 4.2	6; 12.5	70;
	<b>UKZN</b>	29; 35.4	30; 36.6	5; 6.1	64; 78.1	53.9
<b>Agree</b>	<b>OAU</b>	10; 20.8	14; 29.2	18; 37.5	42; 87.5	56;
	<b>UKZN</b>	8; 9.8	6; 7.3	-	14; 17.1	43.1

<b>Neutral</b>	<b>OAU</b>	-	-	-	-	1;
	<b>UKZN</b>	-	1; 1.2	-	1; 1.2	0.8
<b>Strongly disagree</b>	<b>OAU</b>	-	-	-	-	-
	<b>UKZN</b>	-	-	-	-	-
<b>Disagree</b>	<b>OAU</b>	-	-	-	-	-
	<b>UKZN</b>	-	-	-	-	-
<b>I am not sure</b>	<b>OAU</b>	-	-	-	-	3;
	<b>UKZN</b>	2; 2.4	1; 1.2	-	3; 3.7	2.3

From the results presented in Table 5.12, respondents from both institutions have responses to the statement. With almost all of them strongly agreeing and disagreeing with the statement. Combining the results from both institutions, we have 97% of the entire respondents either strongly agreeing or agreeing to the statement.

**Table 5.13 There is need for my university to subscribe to more EIRs in my field N = 130**

<b>There is need for my university to subscribe to more EIRs in my field</b>						
	<b>Institutions</b>	<b>Year 2 F.%</b>	<b>Year 3 F. %</b>	<b>Year 4 &amp; above F. %</b>	<b>Total F. %</b>	<b>Total N=130 F.%</b>
<b>Strongly agree</b>	<b>OAU</b>	7; 14.6	1; 2.1	5; 10.4	13; 27.1	68;
	<b>UKZN</b>	24; 29.3	28; 34.1	3; 3.7	55; 67.1	52.3
<b>Agree</b>	<b>OAU</b>	6; 12.5	14; 29.2	15; 31.3	35; 72.9	56;
	<b>UKZN</b>	11; 13.4	8; 9.8	2; 2.4	21; 25.6	43.1
<b>Neutral</b>	<b>OAU</b>	-	-	-	-	3;
	<b>UKZN</b>	2; 2.4	1; 1.2	-	3; 3.7	2.3
<b>Strongly disagree</b>	<b>OAU</b>	-	-	-	-	-
	<b>UKZN</b>	-	-	-	-	-
<b>Disagree</b>	<b>OAU</b>	-	-	-	-	1;
	<b>UKZN</b>	-	1; 1.2	-	1; 1.2	0.8
<b>I am not sure</b>	<b>OAU</b>	-	-	--	-	2;
	<b>UKZN</b>	2; 2.4	-	-	2; 2.4	1.5

The third statement is used to investigate the attitude of social science doctoral students towards EIRs Table 5.13 above shows that the majority of respondents from both institutions support the assertion with ‘strongly agree’ and ‘agree’ accounting for 27.1% (13) and 72.9% (35) respectively for OAU and 67.1% (55) and 25.6% (21) for UKZN students. Those that were neutral are 3 (3.7%), showing that the students appreciate the role of EIRs in their studies.

Respondents were asked to state how often EIRS meet their expectations. Table 5.8 presents the analysis of the result.

**Table 5.14 Achievement of expectations N = 130**

Degree of frequency	OAU n=48				UKZN n=82			
	Year2 F.%	Year3 F.%	Year4 F.%	Total F.%	Year2 F.%	Year3 F.%	Year4 &above F.%	Total F.%
<b>Very frequently</b>	2; 4.2	3; 6.3	5; 10.4	10; 20.8	13; 15.9	15; 18.3	1; 1.2	29; 35.4
<b>Frequently</b>	4; 8.3	1; 2.1	7; 14.6	12; 25	18; 22	19; 23.2	4; 4.9%	41; 50
<b>Sometimes</b>	3; 6.3	7; 14.6	4; 8.3	14; 17.1	8; 9.8	4; 4.9	-	12; 14.6
<b>Infrequently</b>	-	2; 4.2	3; 6.3	5; 10.4	-	-	-	-
<b>Never</b>	4; 8.3	2; 4.2	1; 2.1	7; 14.6	-	--	-	-

Respondents were asked to choose from very frequently, frequently, sometimes, infrequently and never. In general, 39 (47.6%) agreed that EIRs very frequently met their expectations. 53 (40.8%) respondents agreed EIRs frequently met their expectations while 26 (20%) admitted that EIRs only met their expectations sometimes. Comparing responses from the two institutions, it can be seen that overall, majority of UKZN respondents indicate that EIRS very frequently (29; 35%) and frequently (41; 50%) met their expectations, while in the case of OAU, only 10 (20.8%) and 12 (25%) stated that EIRs very frequently and frequently met their expectations respectively.

**Table 5.15 Level of satisfaction derived from EIRs use N = 130**

Level of satisfaction	OAU N=48				UKZN N=82			
	Year2 F. %	Year3 F. %	Year4 F. %	Total F. %	Year2 F. %	Year3 F. %	Year4 &above F. %	Total F. %
<b>Highly satisfied</b>	1; 2.1	-	2; 4.2	3; 6.3	16; 19.5	11; 13.4	1; 1.2	28; 34.2
<b>Satisfied</b>	5; 10.4	3; 6.3	7; 14.6	15; 31.3	21; 25.6	22; 26.8	3; 3.7	46; 58.5
<b>Somewhat satisfied</b>	4; 8.3	8; 16.7	9; 18.8	21; 43.8	1; 1.2	5; 6.1	1; 1.2	7; 9.8
<b>Not really satisfied</b>	-	2; 4.2	1; 2.1	3; 6.3	-	-	-	-
<b>Not at all satisfied</b>	3; 6.3	2; 4.2	1; 2.1	6; 12.5	3; 3.7	2; 2.4	1; 1.2	6; 7.3
<b>Total N=130</b>	13; 27.1	15 31.3	20; 41.7	48; 100	39; 47.6	38; 46.3	5; 6.1	82; 100

Table 5.15 provides the analysis of the responses. Respondents who admitted that they are highly satisfied and satisfied with EIRs are 31 (29.9%) and 61 (46.9%) respectively. A comparison of respondents from the two institutions show that majority (21, 43.8%) of OAU respondents are only somewhat satisfied with EIRs while 46 (58.5%) from UKZN say they are satisfied.

### **5.2.9 Factors that influence doctoral students use of EIRs (RQ4)**

Research question four of the study sought to address factors that influence EIRs use by doctoral students. This is addressed in the survey questionnaire by the following specific questions:

1. What are your reasons for choosing to use EIRs?
2. What are the factors that hinder your use of EIRs?
3. Does your institution's library offer support in the use of EIRs?
4. What type(s) of support does your institution's library offer?

Table 5.16 presents the results of reasons for choosing to use EIRs. A list of factors was provided for the respondents to choose from. It can be seen from the results that all the listed factors are highly rated by respondents from both institutions. Access to current and up-to-date information (118; 90.8%), availability of computer (112; 86.2%), awareness of the resource (112; 86.2%), saves time (110; 84.6%) and quick and easy retrieval (110; 84.6%) top the list of factors that influence respondents' use of EIRs. A closer examination of the results show that computer skills is rated low among second year (4, 8.3%) and third year (9, 18.8%) OAU students. Note that the ostensibly low rate recorded by respondents in the fourth year and above from UKZN could be due to their low representation in the survey. It can be drawn from the analysis that no factor is remarkably rated high enough.

**Table 5.16 Respondents' reasons for choosing to use EIRs N= 130**

Factors	OAU n=48			UKZN n=82			N=130
	Year 2 F.%	Year 3 F.%	Year4 & above F.%	Year 2 F.%	Year 3 F.%	Year 4 & above F.%	Total F.%
<b>Saves time</b>	12; 25	13; 27.1	15; 31.3	31; 37.8	34; 41.5	5; 6.1	110; 84.6
<b>Easy to use</b>	12; 25	11; 22.9	13; 27.1	31; 37.8	34; 41.5	4; 4.8	106; 81.5
<b>Availability of computer</b>	12; 25%	14; 29.2	18; 37.5	34; 37.8	30; 36.6	4; 4.8	112; 86.2
<b>Awareness of the resources</b>	12; 25	14; 29.2	15; 31.3	24; 29.3	27; 32.9	3; 3.7	112; 86.2
<b>Computer use skills</b>	4; 8.3	9; 18.8	14; 29.2	29; 35.4	24; 29.3	3; 3.7	83; 63.8
<b>More informative</b>	13; 27.1	15; 31.3	16; 33.3	15; 18.3	31; 37.8	4; 4.8	94; 72.3
<b>EIRs search skills</b>	3; 6.3	7; 14.6	10; 20.8	25; 30.5	26; 31.7	3; 3.7	74; 56.9
<b>Ease of access</b>	12; 25	12; 25	18; 37.5	28; 34.1	32; 39	3; 3.7	105; 80.8

<b>Quick and easy retrieval</b>	13; 27.1	13; 27.1	18; 37.5	31; 37.8	31; 37.8	4; 4.8	110; 84.6
<b>Access to current and up-to-date information</b>	13; 27.1	14; 29.2	19; 39.6	36; 43.9	32; 39	4; 4.8	118; 90.8

**Table 5.17 Factors that hinder respondents' EIRs use N = 130**

<b>Factors</b>	<b>Institutions</b>							
	<b>OAU n=48</b>				<b>UKZN n=82</b>			
	<b>Year2</b>	<b>Year3</b>	<b>Year 4 &amp; above</b>	<b>Total</b>	<b>Year2</b>	<b>Year3</b>	<b>Year 4 &amp; above</b>	<b>Total</b>
	<b>F. %</b>	<b>F. %</b>	<b>F. %</b>	<b>F. %</b>	<b>F. %</b>	<b>F. %</b>	<b>F. %</b>	<b>F. %</b>
<b>Consumes time</b>	2; 4.2	3; 6.3	3; 6.3	8; 16.7	9; 11	4; 4.9	- -	13; 15.9
<b>Difficult to use</b>	1; 2.1	4; 8.3	5; 10.4	9; 18.8	3; 3.7	2; 2.4	- -	15; 18.3
<b>Lack of skills to use</b>	11; 22.9	12; 25	15; 31.3	38; 79.2	13; 15.9	14; 17.1	1; 1.2	66; 80.5
<b>Less informative</b>	- -	1; 2.1	1; 2.1	2; 4.2	3; 3.7	- -	- -	3; 3.7
<b>Low skills on use of computer</b>	10; 20.8	13; 27.1	18; 37.5	41; 85.4	8; 9.8	6; 7.3	- -	14; 17.1
<b>Low information literacy skills</b>	11; 22.9	13; 27,1	19; 39.6	43; 89.6	12; 14.6	8; 9.8	- -	20; 24.4

<b>Lack of awareness of EIRs</b>	11; 22.9	12; 25	19; 39.6	42; 87.5	8; 9.8	5; 6.1	1; 1.2	14; 17.1
<b>Poor internet/network connectivity</b>	13; 27.1	15; 31.3	20; 41.7	48; 100	18; 22	18; 22	3; 3.7	39; 47.6
<b>Slow rate of download</b>	13; 27.1	15; 31.3	20; 41.7	48; 100	21; 25.6	15; 18.3	1; 1.2	37; 45.1
<b>Limited IT for EIRs access/use</b>	13; 27.1	15; 31.3	20; 41.7	48; 100	17; 31.3	15; 18.3	1; 1.2	33; 40.2
<b>Limited access to some EIRs</b>	13; 27.1	15; 31.3	20; 41.7	48; 100	29; 35.4	19; 23.2	4; 4.9	52; 63.4

Table 5.17 presents the analysis of responses to the factors that hinder the students' use of EIRs and it reveals a distinct dissimilarity in the responses from OAU and UKZN respondents. All respondents (48; 100%) from OAU indicated that poor internet/network connectivity, slow download rates, limited availability and access to IT facilities as well as limited access to some EIRs hinder their use of EIRs. For the UKZN respondents, the figures are 47.6% (39), 45.1% (37), 40.2% (33) and 63.4% (52) respectively. In terms of the categories 'consumes time', 'difficult to use' and 'less informative', responses from both institutions are similar in the sense these factors are less of a hindrance than other factors. 'Lack of skills to use' is rated high among all respondents (OAU – 38 [79.2%]; UKZN – 66 [80.5%]). The result suggests that most of the factors that constitute hindrances to OAU respondents relate to facilities provided by the institution's library and the respondents' use skills. Fewer respondents, though significant, from UKZN, seem to find institution's library facilities problematic except with regard to limited access to some EIRs (52; 63.4%).

**Table 5.18 Institutional support for EIRs use N = 130**

Options	Institutions	Level			
		Year 2 F. %	Year 3 F. %	Year 4 & above F. %	Total F. %
Yes	OAU	-	-	-	-
	UKZN	26; 30.7	30; 30.6	4; 4.9	60; 72.2
No	OAU	2; 4.2	3; 6.3	3; 6.3	8; 16.7
	UKZN	4; 4.9	4; 4.9	-	8; 9.7
Unsure	OAU	11; 22.9	12; 25	1; 2.1	24; 50
	UKZN	9; 11	4; 4.9	1; 1.2	14; 17.1
No response or missing score	OAU	-	-	16; 33.3	16; 33.3
	UKZN	-	-	-	-
<b>Total</b>					130; 100

From the results, respondents from OAU are either unsure (24; 50%) or disagree (8; 16.7%) that their institution’s library provides support for EIRs use with no respondent indicating ‘yes’ to this question. For their part, 73.2 % (60) of the participants from UKZN indicated, followed by 17.1% (14) who indicated ‘unsure’ and 9.8% (8) for ‘no’. It is apparent from the result that respondents from OAU have no evidence to show for the availability of support for EIRs use at their institution’s library.

**Table 5.19 Types of support offered by institution’s library N = 130**

Type of support	Institutions	Year 2	Year 3	Year 4 & above	Total
		F. %	F. %	F. %	F. %
Library orientation	OAU	-	-	-	-
	UKZN	5; 6.1	6; 7.3	-	11; 13.4
	OAU	-	-	1; 2.1	1; 2.1

<b>Guidance on information use</b>	UKZN	3; 3.7	4;4.9	1; 1.2	8; 9.8
<b>Periodic workshops/seminars</b>	OAU	-	-	-	--
	UKZN	10; 12.2	13; 15.9	-	23; 28.1
<b>EIRs access/retrieval</b>	OAU	-	-	-	-
	UKZN	5; 6.1	6; 7.3%	1; 1.2%	12; 14.6
<b>Research support</b>	OAU	-	-	-	-
	UKZN	1; 1.2	-	-	1; 1.2
<b>No answer</b>	OAU	13; 27.1	15; 31.3	19; 39.6	47; 97.9
	UKZN	15; 18.3	9; 11	3; 3.7	27; 32.9

Respondents were asked to mention the types of support they received from their institutions' libraries. According to the table, UKZN respondents identified periodic workshop/seminars (23; 28.1%), EIRs access/retrieval (12; 1.2%), library orientation (11; 13.4%), guidance on information use (8; 9.8%), and research support (1; 1.2%). Almost all the respondents (47; 97.9%) from OAU did not respond to this question signifying that they have not received any support in their use of EIRs at the OAU library. It is possible that they are unaware of the support facility or none of them has ever sought assistance in the use of EIRs in the OAU library.

This question seeks to establish from the point of view of respondents regarding the importance of library support for EIR access and use. The result of the responses is analyzed and presented in Table 5.20.

**Table 5.20 Need for support in the use of EIRs N = 130**

	<b>Institutions</b>	<b>Year 2 F. %</b>	<b>Year 3 F. %</b>	<b>Year 4 &amp; above F. %</b>	<b>Total F. % N=115</b>
<b>Very important</b>	<b>OAU</b>	9; 18.6	10; 12.2	15;	34;
	<b>UKZN</b>	31; 37.8	29; 35.4	4; 4.9	64 98
<b>Important</b>	<b>OAU</b>	4; 8.4	5; 10.4	5; 10.4	14;
	<b>UKZN</b>	2; 2.4	1; 1.2	-	3; 17;
<b>Missing score</b>	<b>OAU</b>	-	-	-	-
	<b>UKZN</b>	6; 7.3	8; 9.8	-	15; 18.3

From the results, it can be seen that 98 (85.2%) say it is very important for doctoral students to be provided with support in the use of EIRs. The remaining 17 (14.8) agree it is important for there to be support for EIRs use and access. It can be inferred that the idea of EIRs support for social science doctoral students is a popular one.

#### **5.2.10 Electronic information resources (EIRs) use competencies of PhDs (RQ5)**

The study sought to determine the skills that respondents possess to enable them make effective use of EIRs. Several questions were put forward in the survey questionnaire to address this question. The questions include:

1. Have you ever received training in the use of the following – end-user computing, library use, how to search for information on the internet and how to use electronic databases?
2. When did you first learn to use computer?
3. What is your level of competence in the use of computer?
4. How did you first learn to use EIRs?
5. How competent are you in the use of the following?

Respondents were required to indicate the type of training they had received in terms of computer use, library use, how to search for information on the internet and how to use electronic databases.

Table 5.21 below presents the analysis of result.

**Tab. 5.21 EIRs/computer use training received by respondents N =130**

<b>Training received</b>	<b>Institutions</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4 &amp; above</b>	<b>Total</b>	<b>Total N=130</b>
	<b>F. %</b>	<b>F. %</b>	<b>F. %</b>	<b>F. %</b>	<b>F. %</b>	<b>F. %</b>
<b>How to use computer</b>	OAU	13; 27.1	14; 29.2	18; 37.8	45; 93.8	115; 88.5
	UKZN	35; 42.7	30; 36.6	5; 6.1	70; 85.4	
<b>Library use</b>	OAU	13; 27.1	14; 29.2	13; 27.1	40; 83.3	108; 83.1
	UKZN	30; 36.6	34; 41.5	4; 4.8	68; 82.9	
<b>How to search for information on the internet</b>	OAU	1; 2.1	2; 4.1	2; 4.2	5; 10.4	59; 45.4
	UKZN	25; 30.5	25; 30.5	4; 4.8	54; 65.9	
<b>How to use electronic databases</b>	OAU	1; 2.1	2; 4.1	1; 2.1	4; 8.3	56; 43.1
	UKZN	22; 26.8	26; 31.7	4; 4.8	52; 63.4	

From the results in the table above, 115 (88.5%) respondents indicated that they have received training in the use of computers, 108 (83.1%) had received library use training, 59 (45.4%) had received training on how to search for information the internet and only 54 (41.5%) had received training on how to use electronic databases. Clearly the majority of the respondents surveyed have not received training to sufficiently impact the skills required to use EIRs. The results further reveal that only a very insignificant percent of the OAU respondents had received training in the core areas related to EIRs (how to search for information on the internet 5 (10.4%); how to use electronic databases 4 (4.8%)). In the case of UKZN, although most respondents had received relevant training (how to search for information on the internet 54 (65.9%); how to use electronic databases 52 (63.4%)), the percentage of those who have not received relevant training is very significant and cannot be ignored.

**Table 5.22 Stage at which respondents learnt to use computer N = 130**

<b>Stage</b>	<b>Institutions</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4 &amp; above</b>	<b>Total</b>
	<b>F. %</b>	<b>F. %</b>	<b>F. %</b>	<b>F. %</b>	<b>F. %</b>
<b>Primary school</b>	OAU	1; 2.1	-	-	1; 2.1
	UKZN	3; 3.7	-	-	3; 3.7
<b>Secondary school</b>	OAU	5; 10.4	5; 10.4	5; 10.4	15; 31.3
	UKZN	5; 6.1	4; 4.9	1; 1.2	10; 12.2
<b>Undergraduate level</b>	OAU	7; 14.6	6; 12.5	9; 18.8	22; 45.8
	UKZN	24; 29.3	23; 28.1	1; 1.2	48; 58.5
<b>Masters level</b>	OAU	-	4; 8.3	6; 12.5	10; 20.8
	UKZN	8; 9.9	11; 13.4	3; 3.7	22; 26.8

The educational level at which doctoral students learnt to use computer provides insight into the amount of experience they have in end-user-computing. According to TAM 3, the effect of experience on perceived ease of use and perceived usefulness influences an individuals' decision to use a system. In the case of doctoral students' use of EIRs, experience in end-user-computing will affect students' decisions to use EIRs to be based on achievement of results (perceived usefulness) rather than being guided by the ease of use of EIRs (perceived ease of).

Respondents were asked to choose from a list presented to them as shown in Table 5.15. It can be seen from the results that majority (70; 53.9%) of the respondents learnt to use computer during their undergraduate studies; 32 (24.6%) learnt to use computer during their masters studies, 25 (19.2%) in their secondary school, while the least is 4 who learnt in the primary school. The result reveals further that most respondents from OAU (22; 26.8%) and UKZN (48; 58.5%) alike learnt to use the computer during their undergraduate studies with the majority coming from second year students followed by third year students for UKZN. For OAU fourth year and above (9; 18.8%) recorded the highest number of respondents followed by second year (7; 14.6%) who learnt to use computer during undergraduate studies. It can therefore be surmised from this analysis that most of the respondents surveyed have acquired some level of experience in computer use before their PhD studies.

**Table 5.23 Respondents' level of computer use competence N =130**

Level of competence	Institutions	Year 2	Year 3	Year 4 & above	Total	Total N=130
		F. %	F. %	F. %	F. %	F. %
<b>Very competent</b>	OAU	2; 4.2	-	1; 1.2	3; 6.3	33; 25.4
	UKZN	14; 17.1	12; 14.6	4; 4.9	30; 36.6	
<b>Competent</b>	OAU	8; 16.7	9; 18.8	8; 16.7	25; 30.5	62; 47.7
	UKZN	17; 20.7	19; 23.2	1; 1.2	37; 45.1	
<b>Neutral</b>	OAU	1; 1.2	1; 1.2	3; 6.3	5; 10.4	15; 11.5
	UKZN	3; 3.7	7; 8.5	-	10; 12.2	
<b>Incompetent</b>	OAU	2; 4.2	5; 10.4	8; 16.7	15; 18.2	19; 23.2
	UKZN	4; 4.8	-	-	4; 4.9	
<b>Very incompetent</b>	OAU	-	-	-	-	-
	UKZN	-	-	-	-	-
<b>Missing score</b>	OAU	-	-	-	-	1; 0.8
	UKZN	1; 1.2	-	-	1; 1.2	

Respondents were made to rate their computer competencies on the following scale – competent, competent, neutral, incompetent and very competent. Respondents who rated themselves as competent are 62 (47.7%), followed by those who rated themselves as very competent, 33 (25.4%), incompetent, 19 (23.2%) and neutral, 15 (11.5%). No respondent was rated as very incompetent. Closer examination shows that majority of the respondents who rated themselves to be very competent (30; 36.6%) and competent (37; 45.1%) are from UKZN while their counterparts from OAU are 3 (6.3%) and 25 (30.5%) for very competent and very competent respectively. Generally, from the analysis it can be deduced that majority of the respondent from both institutions are competent in the use of the computer by summing up the percentage of those who considered themselves as very competent and competent. It is concerning that some respondents rated themselves as incompetent while some others were neutral in their response to the question.

**Table 5.24 How PhDs first learnt to use EIRs N = 130**

Level of competence	Institutions	Year 2	Year 3	Year 4 & above	Total
		F. %	F. %	F. %	F. %
Friends/colleagues/classmates	OAU	7; 14.6	10; 20.8	13; 27.1	30; 62.5
	UKZN	25; 30.5	28; 34.2	2; 2.4	55; 67.1
Trial and error	OAU	2; 4.2	1; 2.1	1; 2.1	4; 8.3
	UKZN	17; 20.7	22; 26.8	4; 4.9	43; 52.4
Guidance from library staff	OAU	-	-	2; 4.2	2; 4.2
	UKZN	12; 14.6	13; 15.9	1; 1.2	26; 31.7
Guidance from lecturers	OAU	-	-	1; 2.1	1; 2.1
	UKZN	3; 3.7	8; 9.8	1; 1.2	12; 14.6
Course offered by university	OAU	-	-	1; 2.1	1; 2.1
	UKZN	11; 13.4	11; 13.4	2; 2.4	24; 29.3
Library use training	OAU	2; 4.2	3; 6.3	1; 2.1	6; 12.5
	UKZN	14; 17.1	14; 17.1	-	28; 34.2
External courses	OAU	6; 12.5	3; 6.3	6; 12.5	15; 32.3
	UKZN	11; 13.9	16; 19.5	-	27; 32.9

This question sought to find out how the respondents first learnt about EIRs. The responses in Table 5.24 highlight for greater awareness of EIRs and training sessions in the selected institutions. For both institutions, friends/colleagues/classmate topped the list (62.5% and 67.1% for OAU and UKZN respectively). There are disparities for the other options: 4 (8.3%) and 43 (52.4%) from OAU and UKZN respectively said they first learnt about EIRs through trial and error, 2 (4.2%) and 26 (31.7%) respondents stated that they learnt through guidance from library staff. Those who first learnt about EIRs through guidance from lecturers are 1 (2.1%) for OAU and 12 (14.6%) for UKZN. For those who learnt through course offered by university it is 1 (1.2%) for OAU and 24 (29.3%) for UKZN. Other respondents said they learnt through library use training (OAU 6 (12.5%) and UKZN 28 (34.2%)) and external courses (OAU 15 (32.3%) and UKZN 27 (32.9%)) respectively. Clearly most of the respondents first learnt about EIRs through friends/colleagues/classmates.

**Table 5.25 Respondents' level of EIRs use competence N = 130**

EIRs use competence	OAU N=48				UKZN N=82			
	Year2 F. %	Year3 F. %	Year4 F. %	Total F. %	Year2 F. %	Year3 F. %	Year 4 & above F. %	Total F. %
<b>Very competent</b>	1; 2.1	-	1; 2.1	2; 4.2	7; 8.5	7; 8.5	-	14; 17.1
<b>Competent</b>	1; 2.1	3; 6.3	2; 4.2	6; 12.5	12; 14.6	15; 18.3	3; 3.7	30; 36.6
<b>Neutral</b>	6; 12.5	-	3; 6.3	9; 18.8	9; 11	10; 12.2	1; 1.2	20; 24.4
<b>Incompetent</b>	2; 4.2	7; 14.6	7; 14.6	16; 33.3	4; 4.9	3; 3.7	-	7; 8.5
<b>Very incompetent</b>	2; 4.2	1; 2.1	4; 8.3	7; 14.6	-	-	-	--
<b>Never used</b>	1; 2.1	1; 2.1	3; 6.3	5; 10.4	7; 8.5	3; 3.7	1; 1.2	11; 13.4
	<b>Online public catalogue (OPAC)</b>							
<b>Very competent</b>	-	-	1; 2.1	1; 2.1	4; 4.9	3; 3.7	-	7; 8.5
<b>Competent</b>	6; 12.5	7; 14.6	5; 10.4	18; 37.5	10; 12.2	10; 12.2	3; 3.7	23; 20.1
<b>Neutral</b>	4; 8.3	-	3; 6.3	7; 14.65	9; 11	13; 15.9	-	22; 26.8
<b>Incompetent</b>	3; 6.3	7; 14.6	8; 16.7	18; 37.5	6; 7.3	4; 4.9	1; 1.25	11; 13.4
<b>Very incompetent</b>	-	1; 2.1	3; 6.3	4; 8.3	1; 1.2	1; 1.25	-	2; 2.4
<b>Never used</b>	-	-	-	-	9; 11	7; 8.5	1; 1.2	17; 20.7
	<b>Use of CD-ROM Databases</b>							
<b>Very competent</b>	1; 2.1	-	-	1; 2.1	13; 15.9	11; 13.4	2; 2.4	26; 31.7
<b>Competent</b>	9; 18.8	5; 10.4	7; 14.6	21; 43.8	13; 15.9	21; 25.6	2; 2.4	36; 43.95
<b>Neutral</b>	-	-	-	-	10; 12.2	6; 7.3	1; 1.2	17; 20.7

<b>Incompetent</b>	3; 6.3	8; 16.7	13; 27.1	24; 50	2; 2.4	-	-	2; 2.4
<b>Very incompetent</b>	-	2; 4.8	-	2; 4.8	-	-	-	
<b>Never used</b>	-	-	-	-	1; 1.2	-	-	1; 1.2
	<b>Knowledge and use of databases e.g. emerald, JSTOR, google scholar.</b>							
<b>Very competent</b>	1; 2.1	-	-	1; 2.1	18; 22	19; 23.2	4; 4.95	41; 50
<b>Competent</b>	10; 20.8	10; 20.8	12; 25	32; 66.7	13; 15.9	17; 20.7	1; 1.2	31; 37.8
<b>Neutral</b>	1; 2.1	2; 4.2	1; 2.1	4; 8.3	7; 8.5	2; 4.2	-	9; 11
<b>Incompetent</b>	1; 2.1	2; 4.2	6; 12.5	9. 18.8	1; 1.2	-	-	1; 1.2
<b>Very incompetent</b>	-	1; 2.1	1; 2.1	2; 4.2	-	-	-	-
<b>Never used</b>	-	-	-	-	-	-	-	-
	<b>Use of search engines e.g. Google, yahoo, Alta Vista</b>							
<b>Very competent</b>	1; 2.1	-	-	1; 2.1	19; 23.2	16;19.5	4; 4.9	49; 59.8
<b>Competent</b>	10; 20.8	6;12.5	9; 18.8	25; 52.1	12; 14.6	20; 24.4	1; 1.2	33; 40.2
<b>Neutral</b>	2; 4.2	4; 8.3	6; 12.5	12; 25	7; 8.5	2; 2.4	-	9; 11
<b>Incompetent</b>	-	4; 8.3	4; 8.3	8; 16.7	1; 1.2	-	-	1; 1.2
<b>Very incompetent</b>	-	1; 2.1	1; 2.1	2; 4.2	-	-	-	-
<b>Never used</b>	-	-	-	-	-	-	-	-
	<b>Navigation on the internet</b>							-
<b>Very competent</b>	1; 2.1	-	-	1; 2.1%	16; 19.5	13; 15.9	2; 3.7	31; 37.8
<b>Competent</b>	11; 22.9	9; 18.8	10; 20.8	30; 62,5	20; 24.4	19; 23.2	3; 3.7	42;51.2
<b>Neutral</b>	1; 2.1	1; 2.1	3; 6.3	5; 10.4	3; 3.7	6; 7.3	-	9; 11
<b>Incompetent</b>	-	4; 8.3	6; 12.5	10; 20.8	-	-	-	-
<b>Very incompetent</b>	-	1; 2.1	1; 2.1	2; 4.2	-	-	-	-

<b>Never used</b>	-	-	-	-	-	-	-	-
	<b>Working on MS office</b>							
<b>Very competent</b>	1; 2.1	-	-	1; 2.1	16; 19.5	12; 14.6	2; 2.4	30; 36.6
<b>Competent</b>	9; 18.8	7; 14.6	8; 16.7	24; 50	14; 17.1	22; 26.8	3; 3.7	39; 47.5
<b>Neutral</b>	3; 6.3	3; 6.3	5; 10.4	11; 22.9	4; 4.9	2; 2.4	-	6; 7.3
<b>Incompetent</b>	-	4; 8.3	6; 12.5	10; 20.8	5; 6.1	2; 2.4	-	7; 8.5
<b>Very incompetent</b>	-	1; 2.1	1; 2.1	2; 4.2	-	-	-	-
<b>Never used</b>	-	-	-	-	-	-	-	-
	<b>Electronic documents formats e.g. PDF, MPEG, JPEG</b>							
<b>Very competent</b>	1; 2.1	-	-	1; 2.1	20; 24.4	25; 30.5	2; 2.4	47; 57.3
<b>Competent</b>	12; 25	10; 20.8	16; 33.3	38; 79.2	15; 18.3	11; 13.4	3; 3.7	28; 34.2
<b>Neutral</b>	-	2; 4.2	2; 4.2	4; 8.4	2; 2.4	2; 2.4	-	4; 4.9
<b>Incompetent</b>	-	12; 25	1; 1.2	13; 27.1	-	-	-	-
<b>Very incompetent</b>	-	-	1; 1.2	1; 1.2	-	-	-	-
<b>Never used</b>	-	-	-	-	-	-	-	-
	<b>Electronic mail (EMAIL)</b>							
<b>Very competent</b>	1; 1.2	-	-	1; 1.2	18; 23	16; 23.2	1; 1.2	35; 42.7
<b>Competent</b>	12; 25	10; 20.8	14; 29.2	36; 75	18; 23	12; 14.6	4; 4.9	34; 41.5
<b>Neutral</b>	-	2; 4.2	3; 6,3	5; 10.4	2; 2.4	8; 9.8	-	10; 12.2
<b>Incompetent</b>	-	2; 4.2	2; 4.2	4; 8.3	-	2; 2.4	-	2; 2.4
<b>Very incompetent</b>	-	1; 2.1	1; 2.1	2; 4.2	-	-	-	-
<b>Never used</b>	-	-	-		1; 1.2	-	-	1; 1.25
	<b>Online social media e.g. facebook twitter, wikis blog</b>							

The table reveals that, overall; Microsoft Office competence recorded the highest positive responses of 55.4% (72) participants. This is followed by competence in the use of online social

media 53.8% (70) and email with 50.8% (66). Other areas where respondents rated themselves as competent include electronic document formats, navigation on the internet, knowledge and use of databases which recorded 48.5% (63), 44.6% (58) and 43.9% (57) respectively. Few respondents rated themselves as competent in the use of online public catalogue 32.3% (42) and CD-ROM databases 31.5% (41). Comparatively more respondents from UKZN rated themselves to more competent users of the listed EIRs than OAU respondents rated themselves. For example, on the use of OPAC, 30 (36.6%) rated themselves as competent in UKZN while only 6 (12.5%) rated themselves as competent in OAU. In the use of CD-ROM databases 23 (20.1%) UKZN respondents rated themselves as competent while OAU is 18 (37.5%). Also, 50% (24) of OAU respondents reported themselves to be incompetent in the knowledge and use of databases while only 2 (2.4%) reported to be incompetent from UKZN. In the category of use of search engines, 41 (50%) of UKZN respondents considered themselves as very competent whereas only 1 (1.2%) is considered as very competent from OAU. Similarly, in terms of navigation on the internet about 60% (49) of UKZN respondents rated themselves to be very competent while it is only one from OAU. Clearly the result shows that there is a shortage of EIR use skills among respondents although this is greater among respondents from OAU.

#### **5.2.11 The information behavior of social science doctoral students in electronic age**

One of the broader issues sought to be addressed by the study is the information behavior of social science doctoral students in the electronic age. This question therefore investigated the information behavior of respondents in an academic library that is equipped with both printed and electronic resources.

**Table 5.26 Resource sought by social science doctoral students in the electronic age N = 130**

Information sources	Which of the following information sources do you seek in the library?							
	OAU n=48				UKZN n=82			
	Year 2 F. %	Year 3 F.%	Year 4 F.%	Total F.%	Year 2 F.%	Year 3 F.%	Year 4 F.%	Total F.%
<b>Printed books/journal</b>	10; 20.8	10; 20.8	18; 37.5	38; 79.2	17; 20.8	17; 20.8	2; 2.4	38; 46.3
<b>Internet</b>	6; 12.5	5; 10.4	3; 6.3	14; 29.2	21; 25.6	19; 23.2	2; 2.4	42; 51.2
<b>Theses/research papers/reports</b>	13; 27.1	15; 31.3	20; 41.2	48; 100	28; 34.2	24; 29.3	4; 4.9	56; 62.3
<b>Library's electronic resources</b>	3; 6.3	4; 8.4	2; 4.2	9; 18.8	33; 40.2	27; 32.9	4; 4.9	64; 78.1

The result in table 5.26 shows the information resources respondents usually seek information from in the library. Respondents were allowed to indicate all that applied to them. The result reveals that the most sought information resource by OAU respondents is theses/research papers/reports which is indicated by all the respondents (48; 100%). This is followed by printed books/journals which 38 (79.2%) report they seek information from. The least sought information resources indicated by OAU respondents are the internet (14; 29.2%) and library's electronic resources (9; 18.8%). Majority of the respondents from UKZN indicated library's electronic resources (64; 78.1%) as their most sought information resource in the library followed by theses/research papers/reports (56; 62.3%), 42 (51.2%) indicated they often seek information from the internet and the least is printed books/journals. It can be said from the analysis that the information behavior of UKZN respondents has been affected by the electronic age whereas many of the OAU respondents are yet to be affected as they tended to seek information using printed books/journals and theses/research papers/reports.

Table 5.27 shows that OAU respondents make use of library staff the most (41; 85.4%) followed by library catalogue (37; 77.1%) and friends/colleagues/classmates (37; 77.1%). The least used tool indicated by OAU staff is the OPAC (6; 12.5). From the analysis it can be seen that the results from OAU and UKZN are in contrast. OPAC is reported by most UKZN respondents (64; 78.1%)

as the tool they use most to access information whereas it is the opposite with OAU. Library catalogue which is reported as the second least used tool by UKZN respondents is one of the second most used tools by OAU respondents. Assessing the information behavior of social science doctoral students on the basis of the tools often used to access information, it can be said that the electronic age has greatly influenced UKZN respondents' information behavior. OAU respondents on the other hand are yet to show evidence of the effect of electronic information resources in their information behavior.

**Table 5.27 Tools often used to access information N = 130**

Tools	Which of the following tools do you often use to access information?							
	OAU N=48				UKZN N=82			
	Year 2 F. %	Year 3 F.%	Year 4 F.%	Total F.%	Year 2 F.%	Year 3 F.%	Year 4 F.%	Total F.%
<b>Online public catalogue (OPAC)</b>	-	3; 6.3	3; 6.3	6; 12.5	32; 39.1	32; 39.1	3; 3.7	67; 81.7
<b>Library catalogue</b>	11; 22.9	11; 22.9	15; 31.3	37; 77.1	17; 20.7	18; 23	2; 2.4	37; 45.1
<b>Library staff</b>	9; 18.8	13; 27.1	19; 39.6	41; 85.4	27; 32.9	31; 37.8	4; 4.9	62; 75.6
<b>Friends/colleagues/classmates</b>	12; 25	12; 25	13; 27.1	37; 77.1	21; 25.6	26; 31.7	3; 3.7	50; 61

### 5.3 Presentation of data from semi-structured interview

The semi-structured interview was administered to library staff responsible for EIR access, retrieval and use in the academic libraries of the institutions under survey. These officials are referred to as information technology staff (IT staff) at OAU and subject librarians at UKZN.

It is important to reiterate that the study employed mixed data collection methods so that the results of the different methods can be mutually complementary. The outcome is an enhanced and robust illustration of the research results.

The interview was conducted with four (4) IT staff from OAU and four (4) subject librarians from UKZN. The result of the interview was analyzed thematically and presented in the following order: ICT/information literacy skills of library staff, state of ICT and types of EIRs available at OAU

and UKZN libraries for social science doctoral students, social science doctoral students' use of EIRs, policy and budget for EIRs acquisition and awareness.

### **5.3.1 ICT/ information literacy skills of ICT staff and subject librarians**

Respondents were asked to state their levels of competence in computer and information literacy in order to ascertain the quality of assistance they can provide to doctoral students in the use of EIRs. Most of the respondents from OAU and UKZN stated that they are very competent with the exception of two who stated they are competent but needed to upgrade their skills. One ICT staff from OAU declared he is not competent in computer use and lacks adequate information skills to guide doctoral students in the use of EIR. One therefore wonders why a person who lacks knowledge of computer use will be made to work in an ICT section of a reputable library. Respondents were also asked to assess the computer use and information literacy skills of social science doctoral students. The responses of the 8 respondents from OAU and UKZN are similar in this regard. They all admitted that they do not have the practice of taking records of clients' in terms of their demographics. However the responses from OAU reveal that majority of social science doctoral students at OAU do not possess adequate computer and EIRs use skills. The responses from UKZN subject librarians reveal that most social science doctoral students possess a considerable level of computer and EIRs skills.

### **5.3.2 State of ICTs and types of EIRs available at OAU and UKZN libraries for social science doctoral students**

This question investigated the types, state and nature of ICT and EIRs available and accessible to social science doctoral students at OAU and UKZN libraries.

#### **5.3.2.1 State of ICT**

Both libraries are equipped with computers, internet connection and comfortable furniture for students. A subject librarian at UKZN stated that in addition to the general reading space in the library, the library has a separate space called the research commons dedicated to postgraduate students fully equipped with computers and wifi connectivity. One IT staff stated that as at the time of the interview that the IT section of the OAU library has about 1000 desktop computers in different departments with about 140 workstations connected to the internet.

### **5.3.2.2 Types of EIRs available**

IT staff from OAU and subject librarians from UKZN stated that their institutions libraries subscribe to various databases and EIRs which are made available via the internet to all registered students including social science doctoral students. UKZN libraries provide off-campus access to EIRs as well as interlibrary loan facilities to students. According to the UKZN respondents, every registered student can access UKZN electronic resources from anywhere in the world via the internet. The electronic resources of OAU library on the other hand can only be accessed within the campus according ICT staff that were interviewed. It can therefore be inferred that social science doctoral students at UKZN have more access to EIRs than their OAU counterparts.

### **5.3.2.3 Sufficiency and efficiency of EIRs**

Respondents were asked to assess the sufficiency of available EIRs and the efficiency of internet connection at their various institutions' libraries. The result revealed that 3 out of the 4 IT staff interviewed at OAU library reported that the available EIRs are not sufficient to cater for the information needs of social science doctoral students. The respondents at UKZN reported that their EIRs collection is fairly ok at the moment. Two respondents said the library has put in place other facilities such as interlibrary loans for physical resources, library management system (LMS) and pay preview which provide links to other libraries and subscription agents that create access to electronic resources that are not available in UKZN collection. With these facilities, the UKZN library is able to compensate for the deficiencies caused by insufficient budget. The assessment of internet connectivity at UKZN in terms of speed, access to EIRs and quality of facilities is rated above 80% by one respondent although there are occasions when downloading is slow. Generally, respondents from UKZN rated their internet facilities and EIRs access to be high. Similarly respondents from OAU gave a good report of the efficiency of internet connection and EIRs at OAU library however one respondent rated the facilities to be generally poor and scored it below 40%. He added that sometimes it takes up to one week to download a single document. And that the time allotted to students to use the libraries EIRs is too short for them to make meaningful use of the resources. It can be deduced from the interview result that both institutions have made impressive efforts to provide digital repositories and access to EIRs, although the UKZN library appears to be doing more.

### **5.3.3 Social science doctoral students' use of EIRs**

This question examined social science doctoral students' use of EIRs from the perspectives of IT staff of OAU, Nigeria and UKZN, South Africa. This was considered necessary as these categories of library staff are directly involved in library users EIRs search and use in their respective libraries.

#### **5.3.3.1 Social science doctoral students' extent of EIRs use from the perspectives of IT staff from OAU library and subject librarians from UKZN**

The interviewees stated that it was difficult for them to assess and rate the extent of EIRs use of social sciences doctoral students as they lacked records of EIR use according to discipline and level. However, they were able to indicate that, in a week, about 20-25 doctoral students meet them for assistance. The result further reveals that the nature of assistance requested by doctoral students in EIRs use from both institutions is similar. From the result of the interview the assistance doctoral students usually seek falls within the following: how to use EIRs and their particular features; search constructions and strategies; inability to access certain databases; assistance with drafting of research topics, proposals and searching for material for their literature reviews; how to use their personal devices to access their institutions' libraries electronic resources.

#### **5.3.3.2 Social science doctoral students' attitude towards EIRs from the perspectives IT staff from OAU library and subject librarians from UKZN**

The result of the interview reveals that respondents from both institutions have positive attitudes towards EIRs. This conclusion from the responses was reached from the high satisfaction doctoral students express during sessions held with IT staff and subject librarians from OAU library and subject librarians from UKZN respectively.

Three respondents from OAU and one from UKZN are of the view that the doctoral students they encounter have proved that they prefer EIRs and also can hardly do without using EIRs in their thesis writing as they perceive that EIRs add quality and promote efficiency and effectiveness in their research. Another reason given by the respondents is that doctoral students recognize the fact that EIRs facilitate access to current and up-to-date information. Another three respondents from UKZN believe the use of EIRs is being imposed on doctoral students as the global trend of digitization takes its toll in academic libraries. However, all 8 respondents interviewed made it

clear that their assessment is a general one for all postgraduate students not only social science doctoral students as they attend to the generality of postgraduate students.

#### **5.3.3.3 EIRs use support**

Respondents were asked to state the type of support offered to social science doctoral students in the access and use of EIRs. The interview result reveals that doctoral students are adequately provided with required assistance they need in this regard. It was also revealed that subject librarians from UKZN and IT staff from OAU are always available in their respective libraries to attend to social science doctoral students as they come with their needs. The interview further reveals that most doctoral students they attend to possess some level of computer and literacy skills. They nonetheless need experts' assistance in the access of EIRs. This means that social science doctoral students who are among the postgraduate students that the IT staff from OAU library and subject librarians from UKZN assist actually need all the support they can get in the access and use of EIRs.

#### **5.3.3.4 Challenges in EIRs use**

Under the issue of EIRs use the challenges faced by both students and staff alike were raised. Suggestions of possible ways to tackle the challenges were also sought from the interview. Three respondents from OAU stated that the challenges they face are both from the side of the students and those that come from the facilities available at their disposal to perform their duties. The result reveals that IT staff from OAU admit that they have problems of insufficient computers, poor internet connectivity and low EIRs and computer use skills on the part of the students.

Two respondents from UKZN on the other hand stated that the major challenge they face, on the part of the students, is low literacy skills. One mentioned having problem with keeping up with the students because they are so many. The last one said she faces the problem of language barrier which hinders effective communication and also the problem of insufficient subscription. Suggestions of how the identified challenges can be tackled are similar with the both institutions. All respondents generally suggested improvement on the facilities on ground, getting the library to arrange more outreach program and training sessions for doctoral students to get trained in the access and use of EIRs.

### **5.3.4 Policy and budget for EIRs acquisition**

It was revealed from the interview that the OAU and UKZN libraries do not have a clear cut policy for EIRs acquisition however the respondents agreed that the libraries have a vision of fully digitizing their collections. One respondent from OAU and one from UKZN stated that their libraries have EIRs acquisition policy whereas the others said they are not aware of any existing policy. In terms of budget for EIRs majority of the respondents stated they are in no position to know how much is allocated for EIRs acquisition but they are certain that the percentage allocated to EIRs is far higher than what is allocated to acquire print resources. They also stated that whatever amount allocated is not sufficient. A respondent from UKZN stated that about 90% of UKZN library budget is allocated to EIRs acquisition. To be specific they stated that this year (2017) 45 million rand was spent on EIRs while about 5 million rand only was spent on printed resources. It can therefore be drawn from the statements of the respondents that though the academic libraries in question may not have a clearly defined policy for EIRs acquisition but they have stipulated guidelines for EIRs acquisition.

### **5.3.5 Awareness**

Awareness of EIRs by social science doctoral students is imperative on the maximum use of the EIR resources considering the huge amount spent on its acquisition and maintenance. Questions were asked to inquire about the awareness program(s) in place in OAU and UKZN libraries to educate social science doctoral students about EIRs. The interview result reveals that both libraries in question have some programs in place to create awareness of EIRs and also train users in their access and use. Some of the programs they mentioned include; orientation for fresh students; periodic seminars/workshops; others mentioned by UKZN respondents are adverts placed on library's website; use of flyers. It can be seen that both institutions libraries have some form of orientation programs in place through which they educate and inform social science doctoral students about EIRs.

## **5.4 Summary**

This chapter provides analysis of the results from the survey questionnaires and semi-structured interviews. The results show that more participants from OAU participated in the survey than those from UKZN. In terms of disciplines, more disciplines were represented from UKZN compared to

OAU. The results reveal that there is significant evidence of EIR acceptance and use the students under focus. According to the findings, IT facilities in both libraries under consideration are comparable. Both universities libraries are equipped with computers and internet. The electronic information resources reported to be available at both institutions libraries are also comparable. The results however reveal divergence in the extent of use of electronic information resources among respondents from the two institutions. Despite the high presence of EIRs at the OAU library the results show very low use of the resources compared to what UKZN respondents demonstrated. In the final analysis, the majority of respondents indicated that they make equal use of EIRs and printed resources for the purpose of their thesis. Respondents from OAU demonstrated lower level of computer and IT/information literacy skills than UKZN respondents. The results revealed that most respondents lack adequate search skills to access EIRs for effective use.

Results from the interviews were, in some cases, in alignment with questionnaire results while, in other cases, there are stark contrasts. There is a consensus among IT staff from OAU and subject librarians from UKZN that the institutions need to improve on the facilities and resources available for students use. The chapter to follow provides a comprehensive discussion of the findings.

## **CHAPTER SIX**

### **DISCUSSION OF FINDINGS**

#### **6.1 Introduction**

This chapter discusses the findings and interpretation of the results presented in the previous chapter. An explanation of how and where the present study deviates from, and contributes to the existing studies on EIRs use is highlighted in this chapter. It also demonstrates how the findings from both survey questionnaire and semi-structured interview relate to the research objectives, as well as providing answers to the research questions. The interpretations and explanations given in this section are further supported with evidences found in existing literatures thereby giving meaning to data generated from survey questionnaire and semi-structured interview. The main objective of the study was to investigate the extent of EIR use among social science doctoral students of OAU, Nigeria and UKZN, South Africa. The study was thus guided by five research questions:

1. To what extent do doctoral students in UKZN and OAU use EIRs?
2. Which EIRs are most preferred by doctoral students?
3. How have EIRs affected the research the selected students in both universities?
4. What are the factors that influence the use of EIRs by the students?
5. What competencies do the students have that facilitate their use of EIRs and how did they acquire these skills?

The discussion commences with the demographic information of respondents. Further discussions were done under major themes that emanated from key research questions as presented in the sections to follow.

#### **6.2 Demographics**

The demographic information of respondents provided a comparative analysis of social science doctoral students from two universities from two countries. Respondents' distinct characteristics in terms of their academic profiles such as discipline and year of study were needed to describe the doctoral students who participated in the study. The social science doctoral students who

participated in the survey were distinguished according to institution, discipline, level of study, age and gender. The interviewees were distinguished according to their institutions and gender. A total number of 130 social sciences doctoral students participated in the survey from both institutions. The results of the study reveals that 82 (63.1%) of the entire respondents were from UKZN while 48 (36.9%) were from OAU. The explanation for this is that UKZN has a higher number of registered students in their doctoral degree program. In terms of discipline, the result reveals that out of the 17 disciplines represented 6 were from OAU while 11 were from UKZN. Again the explanation for this imbalance is that UKZN offers more courses at PhD level than OAU. Political Science has the highest number of respondents when combined (33; 25.4%) and when considered separately (OAU-19 (14.6%), UKZN-14 (10.8)). Several reasons could be adduced for the low response rate from UKZN. It could be social science doctoral students' unwillingness to fill questionnaires, lack of time as their theses are quite demanding, the researchers' inability to reach most of them and limited time frame for researcher to complete study. This of course needs to be noted as a study's response rate may have adverse effect on the study outcome. The survey also revealed a lot of differences in the social science disciplines offered at PhD level at OAU, Nigeria and UKZN, South Africa. Some similarities are found with disciplines such as Economics, Economic History and Development Studies, Political Philosophy and Economics. The identical disciplines identified among the two institutions are Political Science, Sociology and Anthropology. Whereas OAU offers Sociology and Anthropology as a single discipline, at UKZN, Sociology and Anthropology are offered as two separate disciplines. It is important to point this out as it was not expected to find such great differences in the types and number of disciplines offered in the same faculty or college irrespective of the fact that the institutions are from two different countries. There could be some reasons for this as the two institutions are considered to be among the leading universities in their respective countries. It maybe that the differences in the institutions' vision and mission, education strategies and it may be the need of the countries in terms manpower for industrialization.

In terms of level of study, the majority of respondents - 53 (40%) – are in their third year, 52 (40.8%) are in their second year while 25 (19.2%) are forth year and above. Out of the 130 respondents, 20 (OAU) and 5 (UKZN) are in year 4 and above; 13 (OAU) and 38 (UKZN) respondents are in third year while 13 (OAU) and 39 (UKZN) are in second year. It is important

to note that there are some respondents who have been registered for over 4 years. On the whole OAU recorded a higher response rate (48 out of 55) compared to UKZN (82 out of 138) as a higher number of PhD students responded to the questionnaire from OAU than UKZN (see Table 5.3).

### **6.3 Extent of electronic information use**

An investigation of the extent of use electronic information resources among social science doctoral students is invariably an investigation of the availability and accessibility of information technology infrastructures/tools for the access of electronic information resources (EIRs) either at their institutions or home/work place. Under this section the respondents' perception of EIRs as well as the format of information resources they mostly engage with while writing their theses were investigated. The findings gave an insight to the extent to which social science doctoral students in OAU and UKZN use EIRs.

#### **6.3.1 IT infrastructure and EIRs available to doctoral students in OAU and UKZN**

Majority of the respondents attested to the availability of IT facilities computers (desktop) (90; 69.2%) and CD-ROM (42; 32.3%) in their institutions' libraries. Another significant number (27; 20.8%) stated that they have access to desktop computers both at their institutions libraries and at home and at their workplaces. A good number – 107 (82.3%) – have personal laptops, while 101 (77.7%) admitted they own flash drives. External hard drives are owned by 73 (56.2%) respondents. From this, it can be assumed that social science doctoral students at OAU, Nigeria and UKZN, South Africa are considerably provided with basic IT facilities to access EIRs which are readily available in their institutions' libraries. The results of the semi-structured interview further substantiate the claim that OAU and UKZN libraries have made considerable effort in the provision of these infrastructures. However, OAU respondents did not respond to owning “laptop at home/work place/university library”, signifying that majority of respondents from OAU do not have access to laptop at home/work place/university library”. Moreover, the percentage of respondents who declared none availability of the other resources from both institutions though small, is worthy of note as not having access to such tools may mean several things. It may be that they consider such facilities less important or that they are not able to afford the resource. It may also be that the students lack the competencies required to use these tools. The information

technology infrastructures/tools identified by this study that belong to this category include: CD-ROM (42; 32.3%), cable modem (21, 16.2%), card reader (16, 12.2%), CD/DVD (17, 13.1%), disk drive (30, 21.3) and e-reader (24, 18.5%). According to Iwu (2003) and Chisenga (2006), IT facilities/tools such as cable modem, card reader, disk drive and e-reader are commonly used to acquire, create, store, disseminate or communicate information in the process of information handling of any sort.

Based on the assumption that doctoral students use information intensively, they may have need of all these items. It is therefore unexpected for a significant number of respondents not to have these resources available. In terms of CD-ROMs, the evidence from the present study echoes Hamutumwa's (2014) finding that CD-ROMs are not popular among at the University of Namibia. Similarly, Burman (2013) also found out from the study of library resources among library and information students (including PhD students) of Kurukshetra University Kurukshetra, Haryana, that CD-ROM was the least used resource with only 4 (8.51%) of the respondents indicating to have used it. Amjad, Shamshad and Salman (2013) studied the use of electronic information resources among academic scholars of Islamia University of Bahawalpur Punjab, Pakistan and discovered that CD-ROM databases was rarely used compared to other forms of EIRs. The evidence produced by this study further substantiates the findings of Oyedapo and Ojo (2013) whose study reveals that CD-ROM was the least used library resource in a survey of electronic information resources use at Hezekiah Oluwasanmi Library, OAU. On the other hand, contrary to the findings of the present study Soyizwapi (2005) found from a study of electronic database use among by postgraduate students at UKZN that CD-ROM databases are highly used among PhD students. To be specific, 10 out of 13 respondents state that they make frequent use of CD-ROM databases. Although, Soyizwapi focused was on postgraduate students from the faculty of science and agriculture. It can be assumed that CD-ROM is not popular among the participants of this study.

Vakkari (2008) studied trends in the use of digital libraries by scientists in 2000-2005 using FinELib as a case study and found that availability was a strong predictor of use. According to Dhanavandan and Tamizhchelvan (2012) the increased access and use of electronic information resources is as a result of the availability of relevant electronic resources which can be accessed

24 hours a day. The findings of the present study in terms of availability of EIRs reveals that majority of the respondents confirmed the availability of several EIRs in their institutions' libraries. The EIRs identified to be available in descending order include: e-journals 119 (91.5%), e-books 116 (89.2%), e-journals databases and full-text e-journal articles 108 (83.1%), abstract to e-journals articles 105 (80.8%), online databases 104 (80). The less favored EIRs include: e-research report 63 (48.5%), OPAC 62 (47.7%), e-data archives 61 (46.9%), e-conference 45 (34.6%), e-newspapers 44 (33.8%), CD-ROM 34 (26.2%). It is worthy of note that half (65; 50%) of the respondents are unsure of the availability of OPAC, while 79 (60.8%) declared they are unsure of the presence of CD-ROM databases. The results show more similarities than differences when compared between both institutions. There are similarities in the responses from both institutions in the results of e-book (OAU-43, 89.6%, UKZN-73, 89%), e-journal (OAU-43, 89.6%, UKZN-76, 92.7%), abstract to articles in e-journals (OAU-37, 77.1% UKZN-68, 82.9%), full-text articles in e-journals (OAU-38, UKZN-70), online databases (OAU-31, 64.6%, UKZN-73, 89%), e-newspapers (OAU-6, 12.5%, UKZN-38, 46.3%), e-theses/dissertation (OAU-27, 56.3%, UKZN-73, 89%) e-conference papers (OAU-13, 27.1%, UKZN-32, 39%). The result is presumed similar where both scored above average or both scored below average. The differences are found in the results of OPAC (OAU-17, 35.4%, UKZN-45, 54.9%), e-research reports (OAU-14, 29.2%, UKZN-49, 59.8%), e-data archives (OAU-17, 35.4%, UKZN-44, 53.7%). Irrespective of these variations, it can be assumed that EIRs are provided to a substantial level at the academic libraries under study which is a strong reflection of the global deployment of ICT applications in higher education along with the growing development of virtual communities (Ocholla, 2003). The evidences provided by the present study confirm the claim of Soyizwapi (2005), Hoskins (2005), Buchanan (2008) and Enakrire (2015) in terms of availability of IT infrastructures/tools and EIRs at UKZN libraries. Similarly, Nweze (2010), Adegbiye, Bola and Ogunsola (2012) and Omotayo (2010) in different studies discovered that OAU library has made laudable effort in the provision of IT infrastructures/tools and EIRs for users.

### **6.3.2 Social science doctoral students' perception of their electronic information resources (EIRs) use**

The result of the investigation of the frequency of EIRs use is as follows: daily-OAU 8 (16.7%), UKZN-71 (86.6%); once a week-OAU 15 (31.3%), UKZN 8 (9.8%); once a month-OAU 19 (39.6%), UKZN 3 (3.7%); once in six months-OAU 5 (10.4%), UKZN nil; never-OAU 1 (2.1%), UKZN nil. In order to get a clear picture of the respondents' extent of EIRs use, the analysis was done at the level of respondents' level of study within the institutions. The result is as follows:

- Daily-year 2-OAU 3 (6.3%), UKZN 33 (40.2%); year 3-OAU 2 (4.2%), UKZN 33 (40.2%); year 4 and above-OAU 3(6.3%), UKZN 5 (6.1%):
- Once a week-year 2 OAU 6 (12.5%), UKZN 6 (7.3%); year 3- OAU 3 (6.3%), UKZN 2 (2.4%); year 4 and above-OAU 6 (12.5%):
- Once a month-year 2-OAU 3 (6.3%), UKZN nil; year 3-OAU 8 (16.7%), UKZN 3 (3.7%); year 4 and above-OAU 8 (16.7%), UKZN nil:
- Once in 6 months-year 2 OAU 1 (2.1%), UKZN nil; year 3-OAU 1 (2.1%), UKZN nil, year 4 and above-OAU 3 (6.3%), UKZN nil;
- Never-year 2-OAU nil, UKZN nil; year 3-OAU 1 (2.1%), UKZN nil; year 4 and above-OAU nil, UKZN nil.

It is apparent that there are glaring differences in the EIR use of respondents from the two different institutions despite the similarities in terms of the availability of the resources. This brings to mind the argument availability does not necessarily equate to accessibility or use as Ugah, (2007) has argued. He has noted that it is not enough for ICTs and EIRs to be available, or even accessible bibliographically, but that they also need to be physical accessibility Similarly, Bello (2011) investigated the perception of Lagos State University users' and discovered gross underutilization of EIRs by the generality of students including doctoral students. The result of Bello's study reveals that only a minimal percentage (11.5%) of the respondents used the library's electronic resources. The reason provided by respondents is that electronic resources use was restricted. This is also the case with among faculty and administrators of University of Cape Coast, Ghana where, according to Kwafoa, Imoro and Afful-Arthur (2014), 92% of the respondents indicated a considerable level of awareness of electronic resources yet the result revealed that most respondents indicated none use of the resources. The reasons given for the low use include: slow

nature of the internet, lack of proper guidance, charges to access e-resources and lack of knowledge about tools and techniques used for searching and retrieving e-resources. In the author's opinion most of the respondents who do not use electronic resources may be from the Humanities as most of the respondents are from humanities disciplines. The present study also supports the findings of Fabunmi and Asubiojo (2013). The study examined the awareness and use of OPAC by the generality of OAU students and discovered that OPAC was underutilized by the respondents. 68.7% of the study participants agreed to be aware of the OPAC and its use yet did not make use of it. Inadequate computer/information literacy skills, lack of awareness, irregular power supply, poor network and insufficient IT/infrastructures (computer) were identified as major factors working against EIRs use at the OAU library. Oyedapo and Ojo (2013) discovery is similar to those of Fabunmi and Asubiojo (2013) but the focus is on general EIRs. The study revealed that only a minimal percentage (6%) of the respondents use EIRs daily. It can therefore be assumed that the underutilization of EIRs recorded by social science doctoral students of OAU may be due to one or all of the reasons identified by previous similar studies.

The findings from UKZN respondents support the findings of Hadebe and Hoskins (2010) that 83% of the respondents made use of EIRs frequently. Similarly, Hadebe (2010) revealed that majority of masters' students from the faculty of humanities, development and social sciences made heavy use of EIRs for their research. Hadebe (2010) highlighted some of the advantages of EIRs to respondents in order of preference as follows - access to current information; ability to email, save and print information; accessing information anytime of the day; availability of full-text; easy to use and convenience of use. Limited search results, inability to use software interface and developing a search strategy were some of the problems associated with EIRs use at UKZN library identified by Hadebe's study. As Egberongbe (2011) points out the importance and wide ranging scope of EIRs for information communication, access and retrieval to support research activities is recognized in academia.

### **6.3.3 Information resource format mostly used by social science doctoral students for theses writing**

Table 5.7b reveals the format respondents' use the most for their theses. It was discovered that printed information resources is indicated as the information resource format mostly used by

majority (51, 39.2%) of the respondents. Those that make use of both printed and electronic resources are 44 (33.8%) while 35 (26.9%) indicated they make use of electronic information resources. The result reveals further that most OAU (36, 75%) respondents make use of printed information resources more than EIRs while majority of UKZN (34, 41.5%) respondents make use of the combination of printed and EIRs than they use either only printed resources or EIRs. It is important to note that within UKZN the margin between the percentage of respondents who indicate the use of both printed information resources and EIRs is insignificant. The results at the level of year of study the finding reveals that only 5(6.1%) second year and 10 (12.2%) third year students from UKZN indicate they make use of printed information resources mostly for their theses. Those that indicated they make use of EIRs mostly are 15 (18.3%) for year 2 and year 3 while year 4 and above students in this category are 3 (3.7%). Most year 2 (19, 23.2%) respondents indicated the use of EIRs, 13 (15.9%) respondents in their third year and 2 (2.4%) in year 4 and above indicated the use of the combination of printed and EIRs for the theses. Within OAU on the hand only 2 respondents 1 (2.1%) from year 2 and year 3 each indicated they use EIRs mostly for their theses. For the use of both printed resources and EIRs one (2.1%) respondent indicated from year 2, five (10.4%) from third year while four (8.3%) indicated from year 4 and above.

This finding supports Majyambere's (2014) study of the information seeking behavior of humanities/arts international postgraduate students in public universities in KwaZulu-Natal Province, South Africa. The study found that majority of the respondents (86.8%) chose printed information resources as the most used information resources after online databases for their theses. Respondents considered printed books to be more trustworthy and dependable resource for literature review and research methodology than EIRs. The findings of the present study also confirm Stilwell's (2010) assertion that postgraduate students in most South African universities to a large extent make use of the combination of printed and electronic information resources to meet their academic obligations. The indication is that EIRs though increasing in popularity has not completely displaced printed resources in social science doctoral study research. Gibs, Jennifer, Jill and Heather (2012) found that humanities graduate students (PhD and M.Sc) at Georgetown University considered the library's collection of rare materials, printed journals, books and manuscripts to be important to them. Burman (2013) found that library and information science students at Kurukshetra University library, Kurukshetra make more use of printed resources than electronic resources for educational purpose. The study result shows that 85.08%

of the respondents visit the library to consult printed books while 44.68% and 21.27% visit the library to use e-journals and e-books respectively. Similarly, Wu and Chi-Shuan (2011) studied how humanities (5), social sciences (5) and computer science (8) graduate students from a research oriented university in Taiwan perceive, use and manage electronic resources. He reported that majority of the humanities and social science graduate students who participated indicated high use of EIRs for research activities.

The findings in this section confirms that electronic resources have not and may never completely replace printed physical information resources as both will remain relevant in the academic world (Warwick, Melissa, Isabel, Paul and Nikoleta, 2008). It is imperative to point out that the evidence available show that most social science/humanities information needs are met by printed information resources which is why printed resources continues to be relevant to social science researchers (Wu and Chi-Shuan, 2011; Burman, 2013; Majyambere, 2014; Gibs, Jennifer, Jill and Heather, 2012). It also appears that most important social science information resources are not yet being published electronically (Wu and Chen, 2012). In addition, some of these studies were carried out long before the explosion of the internet (De Tiratel, 2000). Moreover, most of the academic libraries studied are yet to fully digitize their information resources, and as such do not yet have a significant number of resources that are of value to social sciences/humanities researchers in electronic format.

It can be assumed from the findings of the present study that the social science doctoral students who participated in this study from OAU are yet to fully adopt the use of EIRs. It therefore follows that they have not yet benefited from the potentials of EIRs. UKZN participants on the other hand, demonstrated a considerable level of EIRs adoption and as such may have benefited more from the potentials of EIRs. It can be assumed that OAU doctoral students have not developed positive perceptions towards EIRs hence their low use of EIRs. UKZN respondents on the other hand, judging from the extent of their EIR use, can be said to have developed more positive perceptions of EIRs compared to their OAU counterparts. Amjad, Shamshad and Salman (2013) stress that EIRs facilitate the search of large quantity of information. They explain further that the internet and other electronic resources have succeeded in perpetuating the growth of new ways of scholarly communication and effectively restrained the physical restriction related with print resources. It is

therefore imperative for doctoral students to take advantage of the opportunity presented by EIRs and IT to improve their theses and come up with researches that meet international standards.

#### **6.4 EIRs preferred by social science doctoral students of OAU, Nigeria and UKZN, South Africa**

The study finding reveals that the internet is the most preferred EIR of the respondents with 71 (86.6%) from UKZN indicating they use it very frequently while the majority of OAU respondents (26 [54.2%]) indicated they use it occasionally. The result reveals clearly that respondents from OAU do not engage much with EIRs. Not a single respondent from OAU indicated that they use any of the listed EIRs “very frequently” (see Table 5.8). The best that was recorded is in the use of internet which only 14 respondents indicated they use frequently. Majority of the respondents reported infrequently for the others such as e-books, e-journal, e-journals databases and library’s e-resources with the exemption of CD-ROM databases which most respondents indicated they never used. The findings from previous studies have identified several reasons why users avoid EIRs (Wu and Chi-Shuan, 2011; Burman, 2013; Majyambere, 2014; Gibs, Jennifer, Jill and Heather, 2012). The challenges to respondents EIRs use are treated in a separate section. The result reveals a sharp difference in the EIRs preferred by respondents from the institutions under study (see Table 5.8).

The responses to this question are a reflection of the findings on the format of information resources mostly used by respondents for their theses. The results of the interview with IT staff from OAU library surprisingly are at variance with the evidence provided by the survey questionnaire. Three out of the 4 IT staff interviewed at OAU library stated that all the postgraduate students that they assist in the use of EIRs have proved they prefer EIRs to printed information resources while the last respondent stated that he could not say categorically that EIRs are preferred but that they were highly patronized. Below are the responses of the IT staff to social science doctoral students’ EIRs preference.

“All the PhD students from all the disciplines that I attend to have proved to me that they prefer EIRs to print sources. I understand this from my experience with working with them because they find EIRs easier to access and more informative. They get current scholarly information to ensure their literature review is up to date.” (IT staff 02)

Another IT staff said:

“Yes they prefer EIRs because it is quicker to get information with EIRs than with printed resources.” (IT staff 03)

The last respondent reiterated that:

“They prefer EIRs to print because with the help we give to them they are able to achieve more than they used to achieve while using printed resources.” (IT staff 04)

It is clear that the information given by the majority of OAU IT staff relating to the extent of EIRs use of social science doctoral students is at variance with the information gathered from the data generated from survey questionnaire filled by the doctoral students. The result reveals that majority of UKZN respondents indicated preference for the internet with 71 (86.6%) and 10 (12.2%) respondents confirming that they use it very frequently and frequently. Electronic databases and library’s e-resources are the next most preferred EIRs after the internet. Several studies have been carried out to investigate the type of EIRs preferred by different types of users. The findings of Ge (2010) support the findings of the present study in terms of preference of EIRs. The study reveals that the web (29, 96.7%) is the most preferred EIRs followed by databases (27, 90%) and electronic journals (26, 86.7%) by social science/humanities faculties and doctoral students of Tennessee State University. Similarly, Vezzosi (2008) found that the internet was reported by doctoral students at the University of Parma as their first and favorite EIRs and point of access to any type of information for their research work. The use of EIRs from the data gathered confirms the acceptance and adoption of EIRs by UKZN respondents. The result of the present study is plausible as it confirms the outcome of previous studies (Majyambere, 2014; Khaswe, 2010; Hadebe, 2010).

## **6.5 Effect of EIRs on social science doctoral students research**

The third research question addressed by this study is “How has EIRs affected the research work of doctoral students in both universities?” This study was partly motivated by the fact that OAU and UKZN libraries are considered to have made considerable progress in the development of digital repositories and fairly equipped with ICT infrastructures for EIRs access. The findings revealed that UKZN respondents have experienced more positive impacts than OUA respondents. The assessment of EIRs effect was determined by specific statements that related to the impact of

EIRs on respondents' specific doctoral research. The first statement was EIRs access and use enhances the quality of my research. The result revealed that almost all the respondents from UKZN either strongly agreed or agreed to the statement that EIRs enhance the quality of their research work with the exemption of 2 (2.4%) who were neutral and 1 (1.2%) that disagreed with the statement. The findings from OAU respondents revealed that 4 (8.4%) OAU respondents strongly agreed while 29 (60.4%) agreed to the statement. 7 (14.6%) respondents were neutral while 1 (2.1%) and 7 (14.6%) strongly disagreed and agreed to the statement. In a similar study by Kumar and Singh (2011), respondents stated that access to, and use of EIRs have improved their research quality and productivity. This corroborates Kumah's (2015) finding that graduate students of University of Ghana considered the internet to be helpful to their academic work. In most universities, ICT and EIRs are increasingly found to be modernizing the process of teaching, learning and research in most universities in developing countries as they accept and adopt they technology (Nwezeh, 2010). In the case of OAU, it was unexpected for such a high number of respondents to state that access to, and use of EIRs have improved the quality of their research work contrary to what other respondents in other studies have said. This creates room for one to speculate that OAU respondents may be accessing EIRs from other sources other than the library.

The next statement that was used to assess the effect of EIRs on respondents' research is "EIRs access and use promotes efficiency and effectiveness in my research work". The result reveals that majority of UKZN respondents strongly agreed and agreed to this statement. In the case of OAU almost all the respondents disagreed to the statement. This result is in line with the findings from previous sections which corroborated the findings of other studies earlier reviewed.

The following statement was used to assess the attitudes of social science students towards EIRs. The first statement was "the standard of my research will suffer without EIRs". The result revealed that majority of OAU respondents disagreed (26, 54.2%) while a few strongly disagreed (4, 8.4%). 14 (29.2%) respondents maintained they were neutral. On the other hand, majority of UKZN respondents (55, 67.1%) strongly agreed and (16, 19.5%) agreed to the statement with only 2 (2.4%) who disagreed. Again the result from OAU respondents reflects the earlier results from the present study; it confirms the findings that OAU respondents have not really been fully engaged with EIRs compared to their UKZN counterpart.

The next question was: “It is important for a university to have EIRs?” Results revealed that all the respondents from both institutions either strongly agreed or agreed with the exemption of 3 (3.7%) from UKZN who said they were not sure. It can be inferred from this result that despite the fact that the survey evidence shows low use of the resource among OAU respondents, they may have some understanding of the potential of EIRs; hence they agreed it is important for a university to have EIRs.

The last statement used to assess the attitude of social science doctoral students towards EIRs was: “There is need for my university library to subscribe to more EIRs in my field”. The result revealed that almost all the respondents strongly agreed and agreed to the statement. Similarly, the responses of the semi-structured interview revealed that 2 out of the 4 subject librarians interviewed were of the view that UKZN library needs more EIRs to meet users’ demand. Extracts from interview are as follows:

First respondent (SL03)

“We will always like to have more. But to compensate for most of the deficiencies of not having sufficient budget, we have an interlibrary loan facility for physical resources; last year we introduced what is called pay preview, with this we have an account with an oversea subscription agent. This arrangement affords us the opportunity of getting any resources we do not have in the databases we subscribe to with the permission of our subscription agent”.

Second respondent (SL04)

“I think we should get more because right now we have cut down on a lot of databases”.

Third respondent (SL01)

“They are sufficient. Library management has put in place other means such as interlibrary loan, library management system (LMS) links to other libraries to assist access to EIRs that UKZN libraries may not have”.

Forth respondent (SL02)

“They are ok”.

The study also sought to find out if respondents' expectations of using EIRs were achieved and if they were satisfied with EIRs. The results revealed that majority of UKZN respondents agreed that their expectations of EIRs were achieved although 12 (14.6%) indicated that their expectations were only sometimes achieved. Most respondents from OAU agreed that their expectations of EIRs were frequently and sometimes achieved but 14 and 5 said their expectations were sometimes and infrequently achieved. 7 respondents from OAU said EIRs never met their expectations, though few, it is worthy of note as this can mean one of several things. In terms of satisfaction derived from EIRs use, the results reveal that the satisfaction level achieved by UKZN respondents is higher than what OAU respondents achieved. Results from the semi-structured interview further substantiate this finding. All eight respondents from both institutions confirmed that their clients most times expressed high satisfactions with their EIRs services. The high satisfaction rate reported by the respondents is a result of EIRs potentials and capability in information communication. Kwafoa, Imoro and Afful-Arthur (2014) found that users' satisfaction has often been used in literatures to describe or measure how library products and services meet or surpass their expectations.

This finding corroborates those of Amjad, Shamshad and Salman (2013) who found that scholars of Islamia University Bahawalpur expressed high satisfaction with the EIRs use. Similarly, Idoniboye-Obu (2013) found that majority 86 (86.9%) of UKZN doctoral students from the faculty of humanities were satisfied with the use of EIRs. From these responses and drawing from previous result of the present study one can say that the UKZN library is better equipped in terms of IT infrastructures/tools and EIRs than OAU library. Vakkari (2008) found that a university library equipped with quality digital repository has tremendous influence on accessibility and usability of EIRs. It appears that this has affected the attitude of social science doctoral students of OAU and UKZN. This conclusion is drawn from a comparison made between the data gathered from the survey questionnaire and semi-structured interview. In terms of the availability of IT infrastructures/tools and EIRs responses received from survey questionnaire and semi-structured interview are similar. But survey respondents' responses to extent of EIRs use revealed that access and usage of EIRs was drastically low whereas semi-structured interview result revealed the opposite. The researcher is persuaded to go with the result of the survey questionnaire as the students are the actual users of the resources who are in a better position to tell how much access they have and how much they use the resources.

## **6.6 Factors that influence doctoral students use of EIRs**

The fourth research question of the study was: “What are the factors that influence use of EIRs by doctoral students?” The first question used to elicit responses from respondents for this research question was “What are your reasons for choosing EIRs?” The result shows that all the respondents were not influenced by the same factors although the results revealed a lot of similarities than differences in the factors that influenced respondents to use EIRs. The most influencing factor identified by respondents is access to current and up-to-date information. This is expected as doctoral students work within specified and limited time frame. This finding corroborates Hadebe (2010) study who revealed that majority of the humanities masters students at UKZN considered current information as a major factor that influence their use of electronic databases. Similarly, Chiemekwe, Longe, Umar and Shaib (2007) found that majority of the respondents confirmed that current materials and resources for research are most commonly found on the internet. Obasuyi and Usifoh (2013) found that electronic resources create access to information in universities worldwide and researchers are exploiting these resources for their academic and research activities while 112 (86.2%) said they are influenced by availability of computer and awareness of EIRs.

Previous study by Ansari and Zuberi (2010) found that the high use of electronic resources by the academics of University of Karachi digital library was influenced by the academics reportedly computer skills. Antakan, Antilgan, Bayram and Arslantekin (2008) revealed a high use of e-database Ankara University library. This high use according to study is as result of the high (86.5%) awareness of the resource by the respondents. 110 (84.6%) said the fact that EIRs use saves time and it is quick and easy to retrieve information influenced their EIRs use. 106 (81.5%) and 105 (80.8%) said easy to use and ease of access influenced their use of EIRs. the findings did not reveal much difference in the factors that influence EIRs use among the respondents from OAU and UKZN. A major difference is observed in the responses on EIRs search skill where only 20 (15.4%) respondents responded from OAU. The significance of this is that those that did not respond to the question are indirectly saying that they lack sufficient EIRs search skills. Comparing the responses from OAU and UKZN it can be concluded that more respondents from UKZN are possess computer use and EIRs search skills. This partly explains why OUA respondents demonstrated low extent of EIRs use. According to Rehman and Ramzy (2004), low awareness

and poor skills are among the major factors that bring about underutilization of electronic resources.

The second statement used to assess the factors that influence respondents EIR use was “what are the factors that hinder your EIRs use?” Several studies have identified several factors that hinder EIRs use. Oyedapo and Ojo (2013) reported that OAU researchers and postgraduate students identified frequent power failure (68%), difficulty in finding relevant information (62%), lack of information retrieval skills (61%), slow access period (61%), lack of internet access (50%), lack of relevant e-resources in the library (57%) and cost of access to internet is too high (53%). The major hindrance identified by Oyedapo and Ojo’s study is infrequent power supply. Similarly, Majyambere (2015) found that humanities/arts international postgraduate students of UKZN identified several problems that hinder their use of EIRs. The problems are summarized into: lack of off campus access to EIRs; insufficient computers to access OPAC; slow internet connection within campus; problem of password requirements during search process; insufficient skill to construct search terms; some academic journals are not accessible; low computer use skills; lack of printing option; Inability to access full-text of books or journal articles; slow download speed and difficulty to read on screen.

The third statement used to assess the factors that influenced respondents’ EIR is “does your institution’s library offer support in the use of EIRs?” The result reveals that majority (60, 72.2%) of UKZN respondents confirmed that UKZN library offers support for EIR use, 8 (9.7%) respondents said there is no support while 14 (17.1%) respondents were unsure of the availability of support. Of the 32 respondents that responded to this question 8(16.7%) said OAU library does not offer support in the use of EIRs while 24 (75%) said they were not sure of the availability of support. The finding supports Sadler and Lisa (2007) who asserts that with the right support users will be motivated to make more effective use of digital libraries.

The last statement is “what type(s) of support does your institution’s library offer?” The result reveals that that no response came from OAU while UKZN respondents identified several forms of support they receive in the use of EIRs. These include: library orientation (11, 13.4%); guidance on information use (8, 9.1%); periodic workshops/seminars (23, 28.1%); EIR access/ retrieval (12, 14.6%), research support (1, 1.2%). The indication is that the respondents that responded may have received these supports while those who did not respond obviously have never received any form

of support. It can be as result of students' lack of awareness of support services resulting from poor advertisement of library's information services. Whatever the case maybe Oyewusi and Oyeboade (2009) advice that libraries can improve access and use of her resources by improving academic liaison in combining library and information communication technology support and creating open access IT area with personal or helpline supports from IT staff. With this, library users will be able to report any difficulty they encounter in the use of EIRs and expect such difficulties to be addressed. The result of semi-structured interview with IT staff and subject librarians shows that both OAU and UKZN libraries offer various forms of support to help their library users achieve the most from EIRs use. But the semi-structured interview result only support evidence from UKZN survey questionnaire results. Results from OAU semi-structured interview and survey questionnaire are in contrast. The low responses to this question recorded from UKZN respondents may be due to their lack of awareness of the availability of the supports. Availability of information resources and services means ensuring their accessibility and usability; accessibility is ensuring users are aware of, can identify and make use of the resources and services (Ugah, 2008). The result from semi-structured interview on the need for support clearly support Ugah's ascertain as all 8 respondents confirmed library's users need support in the use of the library and her resources.

#### **6.7 Electronic information resources (EIRs) use competencies of respondents**

The fifth research question of the study was: "What competencies do doctoral students in both universities have to use EIRs and how did they acquire these skills?" The result of the study found that most of the respondents from both institutions had received training in the use of computer and the library. Comparatively, more respondents from OAU claim to have received those training than those from UKZN. The results further reveals that more respondents from UKZN had claim to have received more training on how to search information on the internet and use of electronic databases than their OAU counterparts. The result from survey interview confirms that OAU and UKZN respondents receive training in the use of the library resources. The variance in the number of respondents who claimed to have received the listed trainings indicates several things. It could be that the respondents did not make themselves available to attend the trainings or that the trainings were not offered by the respective libraries. It may also be possible that they may have received those trainings from private training classes or during undergraduate studies.

The study further investigated the educational level at which respondents learnt to use computers which is a prerequisite for the use of EIRs. The findings revealed that only 4 (3.1%) of the entire respondents learnt to use computers at primary school. Those who learnt at secondary school are only 25 (19.2%) (OAU 15 (31.5%); UKZN 10 (12.2%). Most of the respondents indicated they learnt to use computers during undergraduate and masters' studies. None of the respondents indicated they learnt computer use during PhD study. This finding reveals that most of the respondents may not have acquired adequate experience in the use of computer which may have affected their use of EIRs. The findings revealed further that most (table 5.24) of the respondents actually did not receive formal training in the use of computer and EIRs. Marchionini (1999) suggests that information literacy skills should be promoted at every educational level. Introducing students to the use of computer early in their educational or study career will help them acquire long experience that will help them face any problem that may arise relating to the use of computer at any stage as they progress in their career. The result presented in table 5.24 indicates that most respondents actually learnt about EIRs from sources other than the library and courses offered by their universities. These other sources include friends/colleagues/class mate, external courses and trial and error. Those who learnt through guidance from library staff, courses offered by university, and library use training are 28 (21.6%), 25 (19.2%) and 34 (26.2%) respectively. The result indicates that whatever outreach program in place in both OAU and UKZN libraries are not effective and efficient enough. One of the semi-structured interview respondents stated that:

“Firstly because they are so many I am not able to keep up with all of them, where they are, things like that, I like to see the students in a formal group to develop that relationship for them to know that they can come to me at any stage for anything. A lot of them do come to me but a lot of them do not know they can, I think we can do a lot more to be more proactive in that area” (SL03).

Comparisons between OAU and UKZN shows that more UKZN respondents claim to have learnt about EIRs from university related sources such as guidance from library staff, courses offered by university, library use training and guidance from lecturers. Most OAU respondents claim to learn through trial and error, external sources and friends/colleagues/classmate. From the evidence presented by the survey questionnaire OAU respondents have not received training in the use of EIR from OAU contrary to the claim of IT staff. The statements of two OAU IT staff are as follows:

“HOL and ICT section of the university normally train students in the use of computer and EIRs, PhD students’ inclusive (IT staff 01)”.

“HOL organizes several training program for all postgraduate students. Newly admitted postgraduate students are taught how to use various forms of information resources. They are also taught how to write research proposal. Social sciences PhD students are not attended to separately” IT staff 04.

Respondents’ rating of their EIR use competence reveals that there is significant difference between students of OAU and UKZN. For example, in the use of OPAC 44 (53.7%), respondents from UKZN indicated that they are very competent and competent in the use of OPAC while there are only 8 (16.7%) from OAU who claim to be competent and competent in the use of OPAC. In the knowledge and use of databases 62 (75.6%) respondents claim to be very competent and competent from UKZN while only 22 (45.8%) claim to be very competent and competent in databases use. More than half of OAU respondents claimed they lacked knowledge of and are incompetent and very incompetent in databases use. The result however reveals some similarities in OAU and UKZN respondents’ claim on navigation on the internet, working on MS office, electronic documents formats, EMAIL and online social media. The similarity is in the fact that the percentages are either above 50% or lower than 50%. The findings reveal that respondents possess some level of EIR use competence and more from respondents from UKZN.

In examining the use of EIRs among social science doctoral students, the present study found support in the TAM 3 assumption of experience moderating the relationships between perceived ease of use and perceived usefulness; computer anxiety and perceived ease of use and perceived ease of use and behavioral intention. The findings on the competence of computer use and EIRs (Table 5.22) reveal that of the study shows that most social science doctoral students learnt to use EIRs during undergraduate and masters’ studies, indicating that they have not acquired experience enough to use EIRs. Training in end-user-computing and EIRs provides opportunity for social science doctoral students to have firsthand experience with computers and EIRs as suggested by TAM 3. This experience would have allowed social science doctoral students to gain understanding of the usefulness of EIRs and how easy/difficult it is to use EIRs. The lack of early exposure to EIRs may have led to the low use of EIRs reported on the part of AOU respondents. The lack of early exposure to computer and EIRs use on the part of UKZN respondents was

compensated for with the availability of support provided by the UKZN library in the use of computer and EIRs use. Hence there are more respondents from UKZN who indicated that they are competent in computer and EIR which may have resulted to their increased use of EIRs.

The effect of experience on the relationship between computer anxiety and perceived ease of use can be used to explain attitude of OAU and UKZN social science doctoral students in the present study. It appears that OAU respondents have not overcome EIRs anxiety (the understanding that it is difficult to use computer and EIRs) hence their low EIRs use (Venkatesh and Bala, 2008). Data presented in Tables 5.4 and 5.4 shows that EIRs are provided by the OAU library yet they were not used by social science students. Stewart (2011) confirms from the study of technology acceptance in organizations that people are discouraged from using a system because they lacked accurate perception of the effort needed to use the system.

The findings of the present study also found support in the TAM 3 assumption that with increased experience the effect of perceived ease of use will be reduced on behavioral intention. The findings of the present study on respondents' frequency of EIRs use (table 5.6a) which reveals UKZN respondents high use explains the effect of experience on UKZN respondents EIRs use. It can be assumed that the support UKZN respondents receive in the use of EIRs has influenced their use of EIRs. Previous studies on EIRs reveal that humanities students and faculty members prefer EIRs to printed resources. The present study has partly refuted that by showing that UKZN social science doctoral students make as much use of EIRs as they use printed resources (Tables 5.6a and 5.7a).

Table 5.24 shows that social science doctoral students received support in the use of EIRs. Some of the supports indicated by UKZN respondents include: how to use computer, library use, how to search for information on the internet and how to use electronic databases. Venkatesh and Bala (2008) demonstrated in their study that institutional support provided in the form of infrastructure, creating dedicated help desks, hiring system experts and training are very important.

## **6.8 Information behavior of social science doctoral students in the electronic age**

EIRs access and use have evidently influenced the education system in various ways. According to Maharana, Dhal and Pati (2013) information behavior comprise the various activities undertaken to access the diverse information resources for work-related, personal, social and educational problems. The present study reveals that social science doctoral students of OAU and UKZN

satisfy their information needs by sourcing for information from printed books/journals, internet, theses/research papers/reports and library's electronic resources. The study found that there is significant difference in the information behavior of social science doctoral students from OAU and UKZN. The analysis of the result presented in table 5.26 reveals that OAU social science doctoral students satisfy their information needs majorly by sourcing information from theses/research papers/report (48, 100) and printed books/journals (38,79.2%). Only a minimal percentage source for information from the internet (14, 29.2%) and library's electronic resource (9, 18.9%). The study by Gibbs, Jennifer, Jill and Heather (2012) found that humanities graduate students at Georgetown University satisfy their information need with printed information resources. Similarly, Al-Suqri (2007) studied the information needs and seeking behavior of social science scholars at Sultan Qaboos University, Oman and found that printed sources remain their main sources of information they consult the internet when there is need for it. Similarly, Folorunso (2014) in Nigeria studied the information seeking behavior of social sciences scholars at the Nigerian Institute of Social Economic Research (NISER) and discovered that printed sources are the researchers' main source of information for research purpose.

The majority of UKZN social science doctoral students, on the other hand, meet their information needs by sourcing for information from their library's electronic resources and theses/research papers/reports. A significant number also source for information using the internet (42, 51.2%) and printed books/journals (38, 46.3%). The indication is that while OAU respondents find printed sources more useful in their study, UKZN respondents feel more comfortable with both printed and electronic sources. The finding in the case of UKZN supports the findings of George, Alice, Terry, Erika, Glorianna and Joan (2006) who found that the graduate students at the Carnegie Mellon University consider the internet as very important source of information in their research but still make much use of printed resources. The finding of this study differs slightly from those of Corlett-Rivera and Timothy (2014) who studied the e-book use and attitude of humanities and social science graduate students at University of Maryland and found that the survey participants were more comfortable with e-books.

## **6.9 Summary of the chapter**

This chapter has discussed and interpreted the findings of this study as presented in the previous chapter. The discussion was done around the major themes that emanated from the research

questions and the problem of the study. These were supported by findings from existing studies in similar areas. In summary, it is found that social science doctoral students in UKZN make more use of EIRs than their OAU counterparts. On the whole, the use of EIRs for the purpose of theses writing is low among social science doctoral students in OAU and UKZN despite the availability of EIRs in their libraries. The study also found that social science doctoral students in OAU and UKZN encounter some challenges in the use of EIRs, some of which arise from their low computer literacy and EIR use skills which could be improved with more support from IT staff and subject librarians in the respective institutional libraries.

## CHAPTER SEVEN

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 7.1 Introduction

The purpose of the study was to investigate the use of electronic information resources (EIRs) by doctoral students in the social sciences at the University of KwaZulu-Natal (UKZN), South Africa and Obafemi Awolowo University (OAU) in Nigeria respectively. The chapter is structured and organized around the research questions of the research problems and presents a summary of the chapters as well as conclusions and recommendation based on research findings and issues identified within reviewed literature. The study's contributions to knowledge and suggestions for future work are also highlighted in this chapter. The following were the research questions of the study:

1. To what extent do doctoral students in UKZN and OAU use EIRs?
2. Which EIRs are most by the students?
3. How have EIRs affected the research projects of these students in both universities?
4. What are the factors that influence use of EIRs by the students?
5. What competencies do the students posses to facilitate their use of EIRs and how did they acquire these skills?

This is a descriptive study that used a survey questionnaire and semi-structured interviews as instruments of data collection. The study was guided by the latest reiteration of the technology acceptance model (TAM 3) by Venkatesh and Bala (2008). The study follows the post-positivist paradigm which is appropriate for its use of both qualitative and quantitative data collection techniques. The study population included social sciences doctoral students from UKZN, South Africa and OAU, Nigeria who are in their second year and above as well as information technology (IT) staff from the OAU library and subject librarians from the UKZN library. Quantitative data was collected from the students by means of a self-administered survey questionnaire while data was collected from the IT staff and subject librarians by means of semi-structured interviews. The quantitative and qualitative data generated were analyzed by using SPSS to generate descriptive statistics and thematically respectively.

## 7.2 Summary of chapters

Chapter one is the introductory chapter of the thesis and it provides the context of the study by outlining the research problem, brief backgrounds to the universities under survey, research objectives, research questions, delimitation and significance of the study. This chapter also presents an introduction of the literature review, the theoretical framework and the study methodology as well as the structure of the study and a brief discussion of ethical considerations.

Chapter two discusses the study's theoretical framework which relies on the Technology Acceptance Model 3 (TAM 3), and which is explored in detail in chapter three. Several other theories of technology acceptance, such as the Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB) and Unified Theory of Acceptance and Use of Technology (UTUAT), Innovation Diffusion Theory (IDT) were also briefly discussed. The discussion included justification for choosing the TAM 3 model. Chapter two highlights the research gaps which the study seeks to close.

Chapter three is a detailed review of extant literature relevant to the study. The review was organized under the following headings – types and availability of electronic information resources (EIRs); extent of EIR use by doctoral students of OAU and UKZN; EIR preferences of PhD students; impact of EIRs on doctoral students' research projects; extent of EIR use by social sciences doctoral students; factors that influence doctoral students' use of EIRs; the EIR use competence of PhD students; adoption and acceptance of EIRs; information behavior of PhD students; and attitudes of PhD students towards the use of EIRs.

Chapter four discusses the study's research methodology and outlines its procedures and instruments of data collection, research paradigm and design, the reliability and validity of research instruments and data analysis as well as ethical considerations. Chapter five provides the analysis and interpretation of results in two sub sections based on the major themes emerging from the research questions and the broader issues identified in the study. The themes that emerged from the research questions include: What are your reasons for choosing to use EIRs; What are the factors that hinder your use of EIRs; Does your institution's library offer support in the use of EIRs; What type(s) of support does your institution's library offer; Stage at which respondents

learnt to use computer; Tools often used to access information; ICT/ information literacy skills of ICT staff and subject librarians; State of ICT and types of EIRs available at OAU and UKZN libraries for social science doctoral students; Challenges of EIRs use; Policy and budget for EIRs acquisition and Awareness

Section one presented the analysis of quantitative data generated survey generate by means of survey questionnaire from social science doctoral students from OAU and UKZN. These were analyzed using Statistical Packages for Social Sciences (SPSS) to generate descriptive statistics and the results were presented on tables. Sub section two presents the thematic analysis of qualitative data generated from semi-structured interview administered to information technology staff from OAU library and subject librarians from UKZN libraries. The chapter closes with a summary presenting a brief rundown of the research results.

Chapter six covers the discussions and interpretation of the research findings analyzed and presented in chapter five. The results interpreted and discussed were supported with evidences found in existing literatures this strengthened the findings of the research. The purpose of chapter six was to check whether the objectives and purpose of the study were achieved and whether the theoretical model successfully provided explanation to the cause of the problem the study set out to address.

Chapter seven which is the last chapter is summarizes the entire study. The aim of this chapter is to draw conclusions for the study based on the findings of the research, present the originality of the study and its contributions to practice, theory and policy as well as making recommendations and suggestions for future studies.

### **7.3 Summary of findings**

The major findings of this research are as follows.

Research question one of the study sought to find out the extent to which doctoral students in UKZN and OAU use EIRs. The extent of EIR use was investigated by the extent of availability of information technology infrastructures and EIRs either at the libraries or at the homes and workplaces of the students. The findings reveal that OAU and UKZN libraries are adequately

equipped with IT facilities. However, UKZN respondents are more exposed and have better access to IT facilities and EIRs than their OAU counterparts. Most OAU respondents do not have laptops available to them at home/work and in the university library.

In terms of the frequency of EIR use, 71 (86.6%) UKZN respondents make use of EIRs daily while most OAU respondents (19, 39.6%) only make use of EIRs occasionally. Another remarkable revelation in respect of extent of EIRs use is format used the most by respondents for theses writing. The result revealed that printed information formats are used by the majority when the results are combined. When considered separately, most OAU respondents (36, 27.7%) respondents make use of the printed format while the majority from UKZN (34, 26.2%) use a combination of printed and electronic formats for their theses writing. It should however be noted that the difference in the number of UKZN respondents that indicated preference for both formats (printed and electronic) is insignificant. On the whole, the findings reveal that EIR use by the students is low (see Tables 5.6a, b and 5.7a, b for details).

The second research question sought to determine the type(s) of EIRs social science doctoral students prefer the most. The results reveal that the internet is the most preferred EIR while the least preferred are CD-ROM databases. The other EIRs preferred by OAU respondents include electronic journals and electronic books while for UKZN respondents, the others are electronic books, library electronic resources, electronic journal databases and electronic journals. The results reveal some similarities in the type of EIRs preferred by students from both institutions.

The third research question sought to examine the effects of EIRs on the research of the students. The findings reveal that EIR access and use has enhanced the research of majority of the respondents although the responses from OAU (68.8%) and UKZN (96.3%) vary. In terms of the potential of EIRs to promote research efficiency, the findings reveal that is the case for the majority of UKZN respondents (72, 87.8%) while almost all the OAU students indicated that EIRs did not necessarily increase their research efficiency. A further examination of the effects of EIRs on the research of the respondents reveal that the UKZN students have developed more positive attitudes towards EIRs than their OAU counterparts. The results reveal that 71 (86.6%) UKZN respondents agreed and 30 (62.6%) OAU respondents disagreed that the standard of their research will suffer

without EIRs. The result reveals that 97% of the entire respondents agreed that it is important for a university have EIRs and that the university should subscribe to more EIRs in their fields of study. This shows that OAU and UKZN respondents share common view concerning EIRs in terms of providing EIRs but significantly disagree with regard to the extent to which EIRs improves their research.

Majority of the respondents agreed that EIRs very frequently and frequently meets their expectations with UKZN respondents scoring higher with 29 (35%) for 'very frequently' and 41 (50%) for 'frequently' respectively. For their part, OAU respondents scored 10 (20.8%) for 'very frequently' and 12 (25%) for 'frequently' respectively. In terms of level of satisfaction derived from EIR use, the findings reveal that the majority (21, 43.8%) of OAU respondents are only 'somewhat satisfied' with EIRs while the majority (74, 90.2%) of UKZN are 'satisfied'.

The forth research question sought to identify the factors that influence the use of EIRs by the students. The following five questions were used in this regard: What are your reasons for choosing to use EIRs? What are the factors that hinder your use of EIRs? Does your institution's library offer support in the use of EIRs? What type(s) of support does your institution's library offer? The responses are 'access to current and up-to-date information' (118; 90.8%), 'availability of computers' (112; 86.2%), 'awareness of the resource' (112; 86.2%), 'saves time' (110; 84.6%) as well as 'quick and easy retrieval' (110; 84.6%). Computer use skill was indicated by a few OAU respondents (year 2 - 4, 8.3% and year 3 - 9, 18.8%). These results show that OAU respondents identified poor internet/network connectivity, slow rate of download, limited IT infrastructure for EIRs access/use and limited access to some EIRs as the major factors that hinder their use of EIRs. UKZN respondents for their part identified lack of computer skills and limited access to some EIRs as their major hindrances while poor internet/network connectivity, slow rate of download, limited IT for EIRs access/use were indicated by a few respondents.

In terms of institutional support for EIR use the results reveal that majority of OAU respondents are either unsure or disagreed that the OAU library provides support for EIRs use as opposed to 73.2% (60) of UKZN respondents who indicated that the UKZN library provides support. In terms of the types of EIRs support offered, UKZN respondents listed periodic workshops/seminars (23;

28.1%), EIRs access/retrieval (12; 1.2%), library orientation (11; 13.4%), guidance on information use (8; 9.8%), and research support (1; 1.2%). All respondents admit that it is important to offer support in the use of EIRs to students. The findings of the study reveals that EIR use by the students can be influenced and improved upon by offering support which is found to lacking at the OAU library.

The fifth research question focused on the competencies that social science doctoral students in both universities possess to enable them use EIRs as well as how they acquired these skills. The respondents rated themselves as competent in the use of MS Office (72, 55.4%), online social media (70, 53.8%) and email (66, 50.8%). Some respondents also rated themselves to be competent in the use of electronic document formats (63, 48.5%), navigation on the internet (58, 44.6%), knowledge and use of databases which recorded (57, 43.9%). A few others rated themselves to be competent in the use of online public catalogue (42, 32.3%) and CD-ROM databases (41, 31.5%). The findings of the study reveals similarity in the level of EIRs use competence of OAU and UKZN respondents however more respondents from UKZN rated themselves to be competent compared to OAU. Similarly, most respondents rated themselves to be competent in the use of computers although the number is higher on the side of UKZN. As to when doctoral students first learnt how to use computers, the findings reveal that majority first learnt during their undergraduate studies as only 25 (19.2%) and 4 (3.1%) learnt at secondary and primary school levels respectively.

With regard to how doctoral students learnt to use EIRs, the study reveals that the majority first learnt from friends, colleagues and classmates. Other means indicated are 'trial and error' (OAU, 4 [8.3%]; UKZN, 43 [52.4%]); 'guidance from library staff' (OAU, 2 [4.2%]; UKZN, 26 [31.7%]); 'lecturers' (OAU, 1 [2.1%]; UKZN, 12 [14.6%]); 'course offered by university' (OAU, 1 [1.2%]; UKZN, 24, [29.3%]); 'library use training' (OAU, 6 [12.5%]; UKZN, 28 [34.2%]), and 'external courses' (OAU, 15 [32.3%]; UKZN, 27 [32.9%]). Regarding the type of training received for information use, the findings reveal that most respondents have received training in computer and library use with OUA recording a higher percentage. The findings reveal further that only a few had received training that includes sufficient EIR use skills.

Finally, the study reveal that the UKZN respondents had better information behaviors than their OAU counterparts who do not seem to have not been significantly influenced by the most recent advances in ICTs as they often seek information using printed books/journals and theses/research papers/reports.

#### **7.4 Conclusions**

The following conclusions are drawn from the foregoing summary of findings. First and foremost, it can be concluded that the use of EIRs is found to be low among social science doctoral students who participated in this study. The use of printed information resources for theses writing was found to be common among respondents, more so among OAU respondents. The low use of EIRs is attributed to several factors, notably the inadequate support from the library and low IT competencies. The effects of these appear to be more severe on the OAU side than on the UKZN side. This adds to the findings of previous studies by Adegbija, Bola and Ogunsola (2012) George, Alice, Terry, Erika, Gloriana and Joan (2006), Soyizwapi (2005) Vessozi (2009) and Igun (2005). It is therefore concluded that the problem of underutilization of EIRs by social science doctoral students of OAU, Nigeria and UKZN, South Africa can be addressed by the provision of adequate support and training in the use of EIRs.

It is revealed that the internet is the most preferred source of EIRs by the study participants. Other EIRs given preference include e-journals, e-journal databases, library's electronic resources and e-books. The study found that respondents' reasons for choosing to use a particular type of EIRs was based on several factors. From the result it appears that the study participants consider the internet easier to use.

The results suggest that both the OAU and UKZN libraries have made laudable efforts in making EIRs available to their clients and that EIRs seem to be more accessible at the UKZN library. The result reveals the need of both libraries to subscribe to more resources and to provide greater access to EIRs This highlights the point made by previous studies that the availability of resources does not necessarily translate into accessibility and use (Ugah, 2007; Vezzosi, 2009).

The findings suggest that the UKZN have benefited more from EIRs than their OAU peers although the OAU respondents demonstrate that they appreciate the importance of EIRs. The findings further suggest that the UKZN students have a more positive attitude towards EIRs than

those from OAU, demonstrated by the higher percentage of EIR users and further buttressed by the findings relating to their information behaviors. The findings in this regards suggest that UKZN students' use of EIRs will increase eventually in response to further support from their academic libraries. The findings also reveal the need for user education on the benefits of EIRs and its potentials at OAU library.

The findings on the inquiry into respondents' EIRs use competencies reveal that in general, respondents need proper training on the use of EIRs. Although there was evidence of a considerable level of EIRs use skills on the part of doctoral students, the study reveals the need for the academic libraries in question to organize training sessions where users can receive prim and proper training on EIRs use. Inadequate EIRs use skills among respondents may be due to the fact that they did not acquire the requisite skills early enough as the study reveal that most doctoral students first learnt to use EIRs during their undergraduate studies. Training on EIRs use should be learnt earlier and at all educational levels.

## **7.5 Recommendations**

It is recommended that:

1. OAU and UKZN libraries provided further education and enlightenment to social science doctoral students on the importance of EIRs;
2. The OAU library provides greater access to her EIRs collections as the apparent cause of underutilization is not lack of awareness but lack of access.
3. Both academic libraries device means of monitoring and supervising EIR use. This is mostly recommended for OAU library where underutilization of EIRs is very high.

The second research question revealed that e-journal, e-journal databases, library's electronic resources and e-books are the EIRs most preferred by the students. It is therefore recommended therefore that:

1. OAU and UKZN libraries should concentrate on the provision of e-journals, e-journal databases, library's electronic resources and e-books so as to ensure the EIRs are used maximally;
2. OAU and UKZN libraries should undertake to investigate why other EIRs (such as CD-ROM databases, OPAC) in their stock are underutilized. This will go a long way to

increasing EIRs use and also reduce the problem of spending scarce resources on acquiring resources that may not be used.

The study found that social science doctoral students in UKZN have been more positively affected than their OAU counterparts by EIRs. In order for the OAU respondents to reap better benefits from EIRs, it is recommended that:

1. The OAU library, as a matter of urgency, puts in place support facilities and program to assist its clients in the use of EIRs;
2. OAU library's IT staff should be more forthcoming in the discharge of their duties in supporting EIR users.

The findings on the forth research question reveal several factors that influence EIR use by the respondents and findings revealed that the academic libraries at both institutions are fairly well-equipped with EIRs. It is therefore the responsibilities of the libraries managements to create avenues that will prompt the maximum and effective use of these resources and it recommended that:

1. Policies be formulated to specify and clearly define budget allocation, needs assessment, collection development and evaluation for EIRs;
2. Policies be implemented by the OAU and UKZN libraries' management to enhance EIRs services to library users;
3. Library management provide academic library staff (IT staff in OAU library and subject librarians in UKZN) with in-service training to capacitate them to provide better support on the use EIRs to library users. This becomes necessary because of the fast rate at which the digital environment is growing.

The study found that most of the social science doctoral students who participated in this study lacked adequate experience in the use of EIRs because most of them first learnt about EIRs at university. It was also revealed that at UKZN; where doctoral students receive support in the use of EIRs use these resources more. This can be explained by the TAM 3 theory which posits experience with computer use influences the decision to use certain technologies on the basis of results they achieve in the use of these technologies rather than the perceived ease of use. Based on this, it is recommended that:

1. Courses on end-user-computing be incorporated into the broad educational curriculum of the universities in question to provide students with the requisite skills for EIRs use. This will create opportunities for students to acquire these skills and give them the experience upon which the decision to use EIRs will then be based on.
2. The OAU library should put in place support and outreach program such as awareness campaigns, training sessions at faculty level, to showcase the library's EIRs and services. These will go a long way to influence clients to use the available EIRs.
3. The UKZN library should intensify and improve on her awareness and outreach program so that more users can take advantage of the opportunities it offers.

## **7.6 Originality and contribution of the study**

From the literature review, it is evident that studies on the use of EIRs by doctoral students are limited. Instead, there is an increasing number of studies on postgraduate students' use of electronic resources in general as well as undergraduate students and faculty (Ugah and Okafor, 2008; Hadebe, 2010; Yusuf and Iwu 2010; Nwezeh, 2010; Bamigboye and Idayat, 2011; Fasae and Aladenyi, 2012; Aderibigbe; Aramide, 2012 and Dolo-ndlwana, 2013). Most importantly there was no comparative study of this nature that has been done within the specific contexts of South Africa and Nigeria. This study aims to compare the extent of EIRs use by doctoral students UKZN in South Africa and OAU in Nigeria respectively in order to gain an understanding of the factors that influence their use and non-use of the electronic resources. The purpose of comparative studies is to borrow advice, evaluate, find out and describe practices from other culture(s), group(s) or nation(s) as the case may be. Comparative studies usually involve the review of multiple cases often with the view of developing typologies or identifying effective practices (Evans, Martina, Bettina, Sursaxby and Peter, 1999). The literatures reviewed covered studies carried out on universities from developing and developed countries within the context of EIRs use. The latest version of technology acceptance model (TAM 3) was used to underpin the study; this was used to provide explanations to the reasons to the underutilization of EIRs found among social science doctoral students of OAU, Nigeria and UZKN, South Africa. The study adds to the few existing literatures that have used the new relation of experience introduced by TAM 3 to understand EIRs use within the context of university.

The present study has provided insight to the extent of services needed for the maximum use of EIRs. The study outcome has revealed the importance and need for the formulation of workable EIRs policy in OAU and UKZN libraries to help direct and guide EIR collection, and the improvement of academic libraries' services to users. The study contributes to librarianship practice by foregrounding the need for IT staff in OAU and subject librarians in UKZN to provide and improve on existing EIR use support program in their respective libraries. It has also revealed areas in which the different academic libraries are deficient in her EIRs service provision. The study provides information on the causes of underutilization of EIRs by social science doctoral students in OAU, Nigeria and UKZN, South Africa, particularly to the study's respondents. If this information is matched with timely intervention from academic libraries' management, the efforts expended on EIRs acquisition and maintenance by OAU and UKZN libraries will be adequately rewarded through increased use.

The study also contributes to the general Nigerian and South African society as increased access and use of information enhances research output. By addressing these issues, the research quality and output of social science doctoral students in OAU Nigeria and UKZN, South Africa will be enhanced and improved. This will eventually translate into placing OAU and UKZN on enviable and competitive position on the international higher educational scene.

### **7.7 Limitations and suggestions for further studies**

The study covered only social science doctoral students in OAU, Nigeria and UKZN in South Africa. The basis of comparison was the fact that both are considered among the top ranking universities in their respective countries. It is therefore suggested that similar studies be carried to focus on other groups of patrons of academic libraries such as academic staff, undergraduates and, most importantly, top university management staff as they are the decision makers of the universities. Future research should investigate the use of social media to serve and promote information services. Future studies should also consider a comparison of research productivity and output of universities of similar statues within Nigeria, South Africa and other countries in Africa.

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# APPENDICES

## APPENDIX 1

**University of KwaZulu-Natal  
College of Humanities  
Department of Information Studies**

### **Questionnaire on the use of electronic information resources among PhD students of South Africa and Nigeria**

Dear Respondents,

I am a PhD student of the above named university carrying out a research on the use of electronic information resources among doctoral students of South Africa and Nigeria.

I solicit your support in the completion of the questionnaire.

Be assured that the information you provide is strictly for research purpose and will be treated with utmost confidentiality.

Thank you

Yours sincerely



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**Section 1 (Demography)**

1. Institution \_\_\_\_\_
2. What is your field of study? \_\_\_\_\_
3. What is your year of study? \_\_\_\_\_
4. Age \_\_\_\_\_ years old: 20-29 [ ] 30-39 [ ] 40-49 [ ] 50-59 [ ] 60 and above
5. Sex: female [ ] Male [ ]

**Section 2 (Extent of electronic information resources (EIRs) use)**

1. Which of these IT infrastructures /tools are available to you?

IT Infrastructures/Tools	University library	Home/work place	Not available	Uni. Library % home/work place
Computer				
Laptop				
Cable modem				
Card reader				
CD-ROM				
CD/DVD Player				
Disk drive				
E-reader				
External hard drive				
Flash drive				

Others please specify \_\_\_\_\_

2. Which of these electronic information resources are available in your university library?

	Yes	No	Unsure
OPAC			
E-book			
E-journals			
E-journal databases			
CD-ROM DATABASES			
Abstract to articles in e-journals			
Full-text of articles e-journal			
Online databases			
E-newspapers			
E-conference proceedings			
E-research reports			
E-theses, dissertation & projects			
E-data archives			
All of the above			

3. Which format do you prefer using most when searching for information for your research work? (Please choose only one answer)

Printed information resources

Electronic information resources

Both of them

4. How often do you use/read EIRs?

Frequency	Daily	At least once a week	At least once a month	At least once every six months	At least once a year	Never

**Section 3 (Electronic information resources (EIRs) preferred by doctoral students)**

1. Please indicate your level of use of the following for research purpose.

Electronic Resources	Information	Very frequently	Frequently	Sometimes	Infrequently	Never
The internet						
E-books						
E-journals						
E-journal databases						
CD-ROM DATABASES						
Library's electronic resources						

1. Which of the following information source do you seek in the library? (Tick all that apply)

Which of the following tools do you often use to access information?

Online public Catalogue (OPAC) [ ]

Library catalogue [ ]

Library staff [ ]

Friends/colleagues/classmates [ ]

Others please specify \_\_\_\_\_

**Section 4 (Effect of electronic information resources (EIRs) on doctoral students research)**

1. What is your MAJOR purpose of using EIRs? (Please select one)

- Writing thesis/research work
- Information
- Leisure

Others please specify

2. When using EIRs for your research, roughly how often do they meet your expectations?

- Very frequently
- Frequently
- Sometimes
- Infrequently
- Never

3. How satisfied are you with the ability of EIRs in meeting your research information needs?

- Highly satisfied
- Satisfied
- Somewhat satisfied
- Not really satisfied
- Not at all satisfied

4. What is/are the advantages of EIRs to you? (Please tick all that apply)

- It creates access to wide range of information
- Availability of wide range of information
- Achievement of improved result
- Links to additional information
- Allows multiples uses for a single resource

**Section 5 (Factors that influence doctoral students' use of electronic information resources (EIRs))**

1. Please indicate the extent to which you agree with the following statements?
- 2.

Statement	Strongly agree	Agree	Neutral	Strongly disagree	Disagree	I am not sure
EIRs access and use enhance the quality of my research						
EIRs access and use promote efficiency and effectiveness in my research work						
The standard of my research work will suffer without EIRs						
It is important for a university to have EIRs						
There is need for my university to subscribe to more EIRs in my field						

3. What are your reasons for choosing to use EIRs? (Tick all that apply)

**Factors**

- Saves time
- Easy to use
- Availability of computer
- Awareness of the resources
- Computer use skills
- More informative
- EIRs search skills
- Ease of access
- Quick and easy retrieval
- Access to current and up-to-date information

4. What are the factors that hinder your use of EIRs? (Tick all that apply)



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6. What is your level of competence in the use of computer?

Very competent      Competent      Neutral      Incompetent      Very incompetent

7. How did you first learn to use electronic information resources? (Tick all that apply)

- Friends/colleagues/class mates
- Trial and error
- Guidance from library staff
- Guidance from lecturers
- Course offered by university
- Library use training
- External courses

8. How competent are you in the use of the following?

<b>EIRs</b>	<b>Very competent</b>	<b>Competent</b>	<b>Neutral</b>	<b>Incompetent</b>	<b>Very competent</b>	<b>Never used</b>
Online Public Catalogue (OPAC)						
Use of CD-ROM database						
Knowledge and use of databases e.g. emerald, ebsco, JSTOR, google scholar etc						
Use of search engines e.g. google, yahoo, AltaVista etc.						
Navigating on the internet						
Working on MS office e.g. MS word, excel, power point etc						
Electronic documents formats e.g. PDF, MPEG, JPEG						

Electronic mail (EMAIL)						
Online social media e.g. facebook, twitter, wikis blogs etc						
Internet telephony						
Online conferencing						

9. How do you search or source for information using EIRs?

	Always	Most times	Sometimes	Rarely	Never
I do my search personally					
With the assistance of a library staff					
With the assistance of a friend/colleague					

**General comments**

**Is there anything else you would like to comment on?**

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**Thank you very much for your time and responses.**

## APPENDIX 2

### Interview questions guide for subject librarians and Information technology staff

#### Demography

1. Sex: Female [ ] Male [ ]
2. Age \_\_\_\_\_ years old: 21-30 [ ] 31-40 [ ] 41-50 [ ] 51-60 [ ] 61 and above
3. Name of university UKZN [ ]
4. What is your qualification? Diploma [ ] PGD [ ] HONOURS [ ] B.Sc. [ ] MSC [ ] PhD [ ] Others specify

#### Section 1 (ICT/information literacy skills)

1. How competent are you in the use of computer?
2. What competencies do subject librarians have to effectively guide PhD students in the use of electronic information resources?
3. Do you think PhD students' literacy/computer skills are adequate for effective use of electronic information resource? If not what skills do you think they need?
4. What program is in place to train PhD students in the use of electronic information resources acquired and subscribed to by the university library?

#### Section 2 (State of ICTs and types of EIRs available for doctoral students use)

1. What is the state of your university library in terms of ICT?
2. What types of EIRs are available in your library for doctoral students use?
4. In your opinion are they sufficient?
5. How would you rate the efficiency of your institutions internet connectivity in terms of the following? a. Speed b. Access to EIRs c. Quality of facilities

#### Section 3 (Doctoral students use of EIRs)

1. How many doctoral students do you help in the use of EIRs in a week?
2. What type of assistance do doctoral students usually seek from you while using EIRs?
3. How often are you able to satisfy their needs?
4. How would you rate the level of satisfaction they get?
5. Will you say doctoral students have positive attitude towards EIRs?
6. In your opinion why do you think doctoral students use EIRs?
7. Do you think doctoral students prefer EIRs to printed resources? What informs your opinion?
8. Why do you think doctoral students need your assistance in the use of EIRs?
9. From your experience with assisting doctoral students, will you say they can do without EIRs? If no give reasons\_\_\_\_\_. If yes give reasons\_\_\_\_\_.
10. Where else apart from library and university environment can students access EIR?
11. What challenges do you face assisting doctoral students in the use of EIRs?
12. What challenges do you think doctoral students face in the use of EIRs?
13. What efforts have been made by university/library management to address challenges of EIRs use?
14. How do you think the challenges can be tackled?

**Section 4 (Policy and budget for EIRs)**

1. Does your library have a policy for EIRs provision?
2. What percentage of the library budget is allocated for EIRs? How much is it?
3. Do you think what is allocated is sufficient? If no, what have you done to increase it?
4. How important is it to your library to budget for EIRs?
5. Considering the resources in terms of fund and other services would you say doctoral students' use of EIRs is encouraging?
6. Do you think the patronage of EIRs by PhD students is equal to what is spent on its provision?
7. Do you consider doctoral students needs/opinion in your collection of EIR?
8. From your understanding of doctoral students' attitude towards EIRs, do you think your collection development policy should concentrate more on EIRs?

**Section 5 (Awareness)**

1. How do you create awareness of electronic information resources to PhD students?
2. What do you think should be done to improve PhD students' access and use of electronic information resources?
3. Do you have additional comments to make regarding PhD students use of EIRs?

**Thank you very much for your time and responses.**

## APPENDIX 3



University of KwaZulu-Natal  
Library  
Medical Library  
Private Bag X7  
Congella  
4013  
Telephone: 031 -260-4373  
Fax: 031- 260- 4426  
Email: [ngcobon15@ukzn.ac.za](mailto:ngcobon15@ukzn.ac.za)

24 April 2014

Dear Respondent

### Informed Consent Letter

**Researcher:** Omamomo Obaguono Eyaufe  
Institution; University of KwaZulu-Natal  
Telephone number: +27747699568, +2347038707282  
Email address: [213573176@ukzn.ac.za](mailto:213573176@ukzn.ac.za)

**Supervisor:** Prof. Stephen M. Mutula  
Institution: University of KwaZulu-Natal  
Telephone number: 033-260 5093  
Email address: [Mutulas@ukzn.ac.za](mailto:Mutulas@ukzn.ac.za)

I, Omamomo Obaguono Eyaufe of the Department of Information Studies, School of Social Sciences, College of Humanities, University of KwaZulu-Natal (UKZN), South Africa, kindly invite you to participate in the research project entitled ‘use of electronic information resources among postgraduate students: a study of university of kwaZulu-Natal (UKZN), South Africa and Obafemi Awolowo University (OAU), Nigeria’.

This research project is undertaken as part of the requirements of the PhD, which is undertaken through the University of KwaZulu-Natal, Information Studies Department.

The aim of this study is to investigate the use of electronic information resources among postgraduate students of South Africa and Nigeria.

Participation in this research project is voluntary. You may refuse to participate or withdraw from the research project at any stage and for any reason without any form of disadvantage. There will be no monetary gain from participating in this research project. Confidentiality and anonymity of records identifying you as a participant will be maintained by the Department of Information Studies, at the University of KwaZulu-Natal.

If you have any questions or concerns about participating in this study, please feel free to contact myself or my supervisor at the numbers indicated above.

It should take you about 15 minutes to complete the questionnaire.

Thank you for participating in this research project.



2014

-----  
Signature

-----  
Date

I ..... hereby consent to participate in the above study.

Name: ..... Date: ..... Signature: .....

**Supervisor's details**

Prof. Stephen M. Mutula  
College of Humanities,  
University of KwaZulu-Natal,  
Pietermaritzburg, South Africa,  
Telephone number: 033-260 5093  
Email address: [Mutulas@ukzn.ac.za](mailto:Mutulas@ukzn.ac.za)

**Student's details**

Omamomo Obaguono Eyaufe  
Information Studies,  
School of Social Sciences,  
College of Humanities,  
Pietermaritzburg, South Africa,  
Cell: +27747699568, +2347038707282  
[213573176@ukzn.ac.za](mailto:213573176@ukzn.ac.za),  
[Omamomo.a@gmail.com](mailto:Omamomo.a@gmail.com)

## APPENDIX 4



The Dean,  
School of Postgraduate Studies,  
Obafemi Awolowo University, Ile-Ife,  
Osun state, Nigeria.

17/9/2015

**RE: Introducing Mrs Omamomo Obaguono Eyaufe PhD Student at University of KwaZulu-Natal**

This letter serves to introduce and confirm that Mrs Eyaufe is a duly registered PhD (Information Studies) candidate at the University of KwaZulu-Natal. The title of his PhD research is 'Use of electronic information resources among doctoral in the social sciences: A comparative study of University of KwaZulu-Natal (UKZN), South Africa and Obafemi Awolowo University (OAU), Nigeria'. The outcome from the study is expected to improve practice, inform policy and extent theory in this field of study. As part of the requirements for the award of a PhD degree he is expected to undertake original research in an environment and place of his choice. The UKZN ethical compliance regulations require him to provide proof that the relevant authority where the research is to be undertaken has given approval.

We appreciate your support and understanding to grant Mrs Eyaufe permission to carry out research in your organisation(s). Should you need any further clarification, do not hesitate to contact me.

Thank you in advance for your understanding

Prof. Stephen Mutula



PhD (Information Studies Programme Coordinator)  
Dean & Head: School of Social Sciences

## APPENDIX 5

The Dean,  
School of Social Sciences,  
University of KwaZulu- Natal,  
Pietermaritzburg.  
17/9/2015



RE: Introducing Mrs Omamomo Obaguono **Eyaufe** PhD Student at University of KwaZulu-Natal

This letter serves to introduce and confirm that Mrs Eyaufe is a duly registered PhD (Information Studies) candidate at the University of KwaZulu-Natal. The title of his PhD research is 'Use of electronic information resources among doctoral in the social sciences: A comparative study of University of KwaZulu-Natal (UKZN), South Africa and Obafemi Awolowo University (OAU), Nigeria'. The outcome from the study is expected to improve practice, inform policy and extent theory in this field of study. As part of the requirements for the award of a PhD degree he is expected to undertake original research in an environment and place of his choice. The UKZN ethical compliance regulations require him to provide proof that the relevant authority where the research is to be undertaken has given approval.

We appreciate your support and understanding to grant Mrs Eyaufe permission to carry out research in your organisation(s). Should you need any further clarification, do not hesitate to contact me.

Thank you in advance for your understanding

Prof Stephen Mutula



PhD (Information Studies Programme Coordinator)  
Dean & Head: School of Social Sciences

**APPENDIX 6**  
**ETHICAL CLEARANCE**



28 June 2016

Mrs Eyaufe Omamomo Obaguono 213573176  
School of Social Sciences  
Pietermaritzburg Campus

Dear Mrs Obaguono

Protocol reference number: HSS/0611/016D

Project Title: Use of electronic information resources among doctoral students in the social sciences: A comparative study of University of KwaZulu-Natal (UKZN), South Africa and Obafemi Awolowo University (OAU), Nigeria.

**Full Approval – Expedited Application**

In response to your application received 24 May 2016, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

**PLEASE NOTE:** Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

Take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Dr Shamila Naidoo (Deputy Chair)  
Humanities & Social Sciences Research Ethics Committee

/pm

Cc Supervisor: Prof Stephen M Mutula  
Cc Academic Leader Research: Sabine Marschall  
Cc School Administrator: Ms Nancy Mudlau & Stella Shulika

---

Humanities & Social Sciences Research Ethics Committee

Dr Shanika Singh (Chair)

Westville Campus, Govan Mbeki Building

Postal Address: Private Bag X64001, Durban 4000

Telephone: +27 (0) 31 204 2287/22042877 Fax: +27 (0) 31 204 4029 Email: [shs@ukzn.ac.za](mailto:shs@ukzn.ac.za) / [academic@ukzn.ac.za](mailto:academic@ukzn.ac.za) / [info@ukzn.ac.za](mailto:info@ukzn.ac.za)

Website: [www.ukzn.ac.za](http://www.ukzn.ac.za)



100 YEARS OF ACADEMIC EXCELLENCE

Flagging Candidate: ■ Edgewood ■ Howard College ■ Medical School ■ Pietermaritzburg ■ Westville

## APPENDIX 7

### PERMISSION TO CONDUCT RESEARCH AT OAU

**OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE, NIGERIA**  
**DIRECTORATE OF ACADEMIC AFFAIRS**  
**EXAMINATIONS AND RECORDS DIVISION**

*Our Ref:* R. DAA/EO/57

*Your Ref:*



Telegrams: *IFEVARSITY IFE*

Telephone: (036) 230290

(10 Lines)

Website: [www.oauife.edu.ng](http://www.oauife.edu.ng)

E-mail: [registra@oauife.edu.ng](mailto:registra@oauife.edu.ng)

Date: October 5, 2015

Professor Stephen Mutula,  
Dean & Head, School of Social Sciences/  
PhD (Information Studies Programme Coordinator),  
University of KwaZulu-Natal,  
Private Bag X01,  
Scottsville, 3209,  
South Africa.

E-mail: [socialsciences@ukzn.ac.za](mailto:socialsciences@ukzn.ac.za)

Dear Professor Mutula,

**RE: INTRODUCING MRS. OMAMOMO OBAGUONO EYAUFE - PHD STUDENT  
AT UNIVERSITY OF KWAZULU-NATAL**

At the instance of the Registrar, Obafemi Awolowo University, Nigeria, we write in response to your letter dated September 17, 2015 pertaining to the above subject. We are pleased to approve your request that **Mrs. Omamomo Obaguono Eyaufe** carry out original research in the University for her PhD Thesis entitled Use of Electronic Information Resources among Doctoral in the Social Sciences: A Comparative Study of University of KwaZulu-Natal (UKZN), South Africa and Obafemi Awolowo University (OAU), Nigeria. It is noted that the purpose of the research is to improve practice, inform policy and extent theory in the field of study.

Please accept our kind regards.

Yours sincerely,

  
R. N. Akinrinade (PhD),  
Principal Assistant Registrar, Examinations and Records,  
For: Registrar



## APPENDIX 8

### GATE KEEPER UKZN



28 April 2016

Mrs Eyaufe Omamomo Obaguono (SN 213573176)  
School of Social Sciences  
College of Humanities  
Pietermaritzburg Campus  
UKZN  
Email: [omamomo.a@gmail.com](mailto:omamomo.a@gmail.com)

Dear Mrs Obaguono

#### RE: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research at the University of KwaZulu-Natal (UKZN), provided Ethical clearance has been obtained. We note the title of your research project is:

*"Use of electronic information resources among doctoral students in the social sciences: A comparative study of University of KwaZulu-Natal (UKZN), South Africa and Obafemi Awolowo University (OAU), Nigeria".*

It is noted that you will be constituting your sample by handing out questionnaires to students and conducting interviews with library staff members at Pietermaritzburg and Howard College campuses.

Please ensure that the following appears on your questionnaire/attached to your notice:

- Ethical clearance number;
- Research title and details of the research, the researcher and the supervisor;
- Consent form is attached to the notice/questionnaire and to be signed by user before he/she fills in questionnaire;
- gatekeepers approval by the Registrar.

Data collected must be treated with due confidentiality and anonymity.

Yours sincerely

MR S S MOKOENA  
REGISTRAR

---

#### Office of the Registrar

Postal Address: Private Bag X54001, Durban, South Africa

Telephone: +27 (0) 31 260 8006/2206 Facsimile: +27 (0) 31 260 7624/2204 Email: [registrar@ukzn.ac.za](mailto:registrar@ukzn.ac.za)

Website: [www.ukzn.ac.za](http://www.ukzn.ac.za)



Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

**APPENDIX 9**  
**EDITOR'S REPORT**

*Aghogho Akpome*

Freelance Writing & Editing Services  
20, Via Richardia,  
Arboretum, Richards Bay, 3900  
c/o Department of English  
University of Zululand  
Email: [akpome@igmail.com](mailto:akpome@igmail.com)  
[akpome4@unizulu.ac.za](mailto:akpome4@unizulu.ac.za)  
Cell: 0719430700

15 November 2017

To Whom It May Concern

This is to certify that I have provided language editing for the following doctoral thesis:

Title:

**Use of electronic information resources among doctoral students in the social sciences: A comparative study of University of KwaZulu-Natal (UKZN), South Africa and Obafemi Awolowo University (OAU), Nigeria**

Author:

**Omamomo Obagumo Eyaufe, University of KwaZulu-Natal**

Do not hesitate to contact me if the need arises.

Many thanks and regards,



Aghogho Akpome, *Dlit et Phil*

*Member: Editorial Board, English in Africa journal  
English Academy of Southern Africa (Council member, 2014- )  
Southern African Freelancers' Association (SAFREA)*

*Research Fellow: Centre for African Studies, University of the Free State (2013-2016)*