An investigation into the use of electronic resources by postgraduate students in the department of postgraduate studies in education at the Central University of Technology

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DECLARATION

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DEDICATION

I dedicated this thesis to my children, my daughters Lebogang, Georgina, Tshenolo, Tshiamo and my son Eucha, and my sister Lerato. Thank you for your support and encouragement in writing this thesis.

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LIST OF ABBREVIATIONS AND ACRONYMS

BV	Banasthali Vidyapith
CPUT	Cape Peninsula University of Technology
CUT	Central University of Technology
EIR	Electronic Information Resources
EIS	Enterprise Information Systems
E-RESOUCES	Electronic resources
GOI	Government of India
HONS	Honours
ICT'S	Information Communication Technologies
IT	Information technology
ITT	Indian Institute of Technology
LIS	Library and Information Science
LISBNETWORK	Library and Information Science Academic Blog
OCLC	Online Computer Library Center
OPAC	Online Public Access Catalogue
PE	Perceived Ease
PEOU	Perceived Ease of Use
PEU	Perceived Ease Usefulness
PG	Postgraduate
PGCE	Post Graduate Certificate in Education

PIM	Personal Information Management Programme
PU	Perceived Usefulness
SNA	Sokoine National Agricultural Library
SPSS	Statistical Package for Social Sciences
TAM	Technology Acceptance Model
UKZN	University of Kwazulu-Natal
UKZNP	University of KwaZulu-Natal Pietermaritzburg

ABSTRACT

Libraries use technology to improve the management of scholarly information and to provide faster access to information elsewhere. Over time, an important change was perceived in collection development policies and practices of libraries. Printed materials were increasingly replacing electronic forms of information.

This research investigated the use of electronic resources by Postgraduate certificate Education (PGCE) students at the Central University of Technology (CUT). The research adopted the Technology Acceptance Model (TAM) by Fred Davis (1989) as its theoretical framework. A quantitative research approach was used in the study. Quantitative research involved the distribution of an online questionnaire to postgraduate certificate education (PGCE) students to obtain information about their usage of the library's e-resources, as well as the relevance of those sources. The population targeted was hundred and eighteen (118) postgraduate certificate education (PGCE) students from the Department of Postgraduate Studies in Education at the CUT. Total population sampling was used. The response rate was 76.3%. The Statistical Package for Social Sciences (SPSS) was utilised to analyse data.

Most of the respondents knew, but did not use SA e-publications, Emerald, OECD iLibrary, ProQuest central, ScienceDirect, or Taylor & Francis. Most respondents did not know how to use library tools, such as the OPAC, WorldCat and Discovery. Respondents preferred both print and e-resources and they became aware of databases through training from the university library. The challenges when searching for e-resources, were slow internet, using e-resources off campus, lack of data to use e-resources from home, and not knowing which database to select. The usage of e-resources by the respondents was poor despite many students being aware of them.

Recommendations for more effective use of e-resources at CUT included: extending the Personal Information Management Programme to accommodate postgraduate students too; using alternative channels such as the radio station CUTFM, CUT library Facebook page, and the Thutong online publication to market library resources and training more

effectively; conducting customer satisfaction and needs surveys on library services to address concerns and to improve current services; ensuring that faculty librarians are up to date with the current technology and aware of future trends in e-information resources.

Keywords: postgraduate students, PGCE, academic libraries, electronic resources, e-books, electronic databases, Technology Acceptance Model

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CHAPTER 1
BACKGROUND AND RATIONALE FOR THE STUDY

1.1 INTRODUCTION

Early in 1980s, libraries were increasingly depending on online systems, electronic databases, and vendor links, which profoundly influenced collection development policies. Electronic resources (e-resources) have shown a significant increase in the 21st century, as they changed how information is searched by students and researchers and their way of thinking. Currently e-resources are identified as the most important resources for the dissemination of information in higher education institutions, particularly for postgraduates and academics (Edem & Egbe, 2016).

It is essential for library services and resources to have adequate access to research and other information to attain good quality academic skills in higher education, notwithstanding the physical location of students, faculties, and programmes (Gibbs, 2000). Consequently, institutions of higher learning worldwide have embraced information and communication technologies (ICTs) to facilitate optimum and quality teaching and learning (Mbatha & Naidoo, 2010). Academic libraries are transforming to embrace ICTs and migrate towards e-resources for easy access to information by distance learners (Mulla, 2011). As a result, e-resources have brought a paradigm shift to the way libraries are utilized (Liu, 2006). The influence of ICTs in users and their way of thinking, has been significant. The implementation of e-resources has influenced the communication model in research done locally, tremendously. The functionality of e-resources relies on optimal use of those services available (Chandel & Saika, 2012).

Although ICTs are valuable to libraries, most libraries, particularly in developing countries are disadvantaged with regards to ICTs, because of numerous difficulties such as lack of effective ICT services. The cost of internet connectivity is pricey; internet connectivity speed is slow, there is a lack of skills and ability to access and use e-resources and no definite support (Chivhanga, 2000; Mutula, 2001; Ngini et al., 2002). Nonetheless, it is uncertain whether users are well-informed about the availability of resources or how much

users use accessible e-resources, and the difficulties they encounter when accessing and using e-resources in the library.

The turmoil surrounding the *#feesmustfall* movement clearly revealed the lack of government funding for university libraries in South Africa. On campuses nationwide, various factors affecting budgets, was negative, including academic libraries. The fluctuating value of the Rand against major international currencies, the 14% VAT (now 15%) on e-resources and annual inflation increases has had an appalling result on the amount of money universities have available to spend (CUT Library and Information Service, 2017). The outbreak of the COVID-19 pandemic forced the CUT and also the country to come to a standstill. After lockdown, enhanced strategies had to be enforced for the academic year to continue. An immediate plan of action was implemented, with an off-campus online support LIS team to assist students and staff to access the necessary electronic resources (CUT Library and Information Services, 2020). E-resources' costs increased dramatically, making it difficult to afford and to sustain the library's transition to e-based information resources, in support of the changing information-seeking needs and behaviour of students and researchers. Recently, transformation in technology has effectually changed the way information is retrieved, gathered, and distributed. E-resources had become necessary to meet libraries' information requirements (Jogan, 2015).

The Central University of Technology (CUT) Library has begun embracing the development of an e-resource collection, while still maintaining access to hard copies of materials. A decision was taken that it would be in the best interest of the institution to increase the funding for electronic materials, including e-books (CUT Library and Information Services, 2017). To date, no empirical investigations have been done on the use of e-resources at CUT.

1.2 PROBLEM STATEMENT

Over the past five years the CUT Library has invested large funds to buy e-resources and computer systems that would support and give access to those e-resources. Most CUT

Library databases are multidisciplinary. Academic libraries subscribe to and buy various types of e-resources that can be accessed anywhere, anytime. Because the CUT Library devotes a large percentage of its budget to buy suitable e-resources for its students, it is important to investigate the usage patterns of current e-resources. To determine how much e-resources are accessible and used, it important to find out if there are e-resources that are utilised or not at all. It will be significant to know so that recommendations in improving the use of the e-resources or to cancel the subscription of those not used, can be made.

Academic libraries make major investments in subscription fees, storage, information management systems, and awareness and promotion initiatives to ensure that users use the resources. It is, therefore, important for library users to make maximum use of electronic library resources to fulfil their information needs so that the library can realise the benefit of investing in these resources (Moyo, 2017). Although many universities, CUT included, have substantially invested in e-resources with a view to harness large benefits from accessing e-resources, there has generally been low utilization of e-resources especially in resource-constrained environments such as Africa (Bwalya & Ssebbale, 2018). A small attempt has been made to establish student awareness and usage of e-resources at CUT library. Likewise, the researcher wanted to determine the awareness and usage levels of e-resources by PGCE students at CUT in the department of postgraduate in education. If the students are aware of and use the e-resources, to what extent do they do so and, if they are unaware of or do not use the resources, the barriers that prevent them from using e-resources.

1.2.1 The objectives of the study

This study aims to:

- Determine to what extent PGCE students are aware of different types of e-resources in CUT library
- Identify e-resources that are used by PGCE students at CUT
- Establish how often the PGCE students use e-resources
- Identify the ICT skills the PGCE students need to use e-resources successfully

- Determine for what purpose PGCE students use e-resources
- Identify challenges of postgraduate Education students concerning e-resources.

1.2.2 Research questions

This research investigated the use of e-resources among Postgraduate certificate education (PGCE) Education students at the CUT. This was achieved by focusing on the questions below:

- To what extent are PGCE education students aware of the different types of e-resources in the CUT library?
- Which e-resources do PGCE education students at CUT use?
- How frequently do the PGCE Education students at CUT use the library's e-resources?
- What ICT competencies do PGCE education students need to use e-resources effectively?
- Why do PGCE Education students at CUT use e-resources?
- What challenges are encountered by PGCE students at CUT when using e-resources?

1.2.3 Theoretical framework: Technology Acceptance Model (TAM)

This study is viewed through the lens of the technology acceptance model (TAM). Davis introduced the TAM in 1986. It is a common model relevant to technology. "Since its introduction by Davis, TAM has been widely used for predicting the acceptance, adoption, and use of information technologies. Perceived usefulness and perceived ease of use instruments have received substantial attention by researchers both empirically and theoretically" (Selim, 2002, p.344). TAM has confirmed to be a theoretical model in assisting to clarify and envisage the behaviour of the user of information technology (Legris et al., 2003). TAM is considered an influential extension of the theory of reasoned action (TRA), according to Ajzen and Fishbein (1980).

1.3 DEFINITIONS OF IMPORTANT TERMS RELEVANT TO THE STUDY

Electronic resources (e-resources) –Edem and Egbe (2016) assert the term 'electronic resources' is not used consistently; it may be referred to as electronic information resources (EIR), electronic information resources and electronic library resources. Digital resources, digital materials and soft library resources are other terminologies used for electronic information resources (Edem & Egbe, 2016).

Use - According to Okon and Lawal (2012), 'use' appears to be a complicated term that has varied definitions and therefore difficult to explain. In the context of this research the word 'use' means to find information from e-resources.

Postgraduate students - Postgraduate students have already obtained previous degree(s) and are studying for a higher qualification, for instance a postgraduate diploma, Honours (Hons), or doctoral level qualifications.

1.4 RESEARCH DESIGN AND METHODOLOGY

Research designs are inquiries within qualitative, quantitative, or mixed methods approaches that provide specific direction for procedures in a research design (Creswell, 2014). A quantitative research approach was used in the current study. Quantitative research involved the distribution of an online questionnaire to postgraduate students to obtain information about their usage of library's e-resources and the relevance of those sources in their studies. A questionnaire is explained as a set of written questions the researcher uses to collect data from the respondents and is regarded as one of the tools used frequently to gather information in the social sciences (Terre Blanche et al., 2006). This study used a questionnaire to collect information. Questionnaires are suitable and cheaper to disseminate to participants. They are cost effective tools to gather data from individuals and they can be used for subjects over a wide geographical area. However, there are advantages and disadvantages involved in questionnaires. The advantages are that the individuals can respond to the questions quicker; the researcher can easily examine them for correctness; they are cheaper, and they are easier to manage than interviews (Treiman, 2009). Surveys are dynamic, as many questions can be asked about

the topic. The advantage of emailing a survey to postgraduate students is that it is easier to collect data from a large population (Creswell, 2014). A quantitative approach in this research permitted the researcher to determine the existing connection between the retrieval and use of e-resources. One disadvantage of a questionnaire is that not all the respondents may respond. This may create a very unsatisfactory response. Another disadvantage is that it is impossible to enquire about matters in detail. Leedy and Ormrod (2014) state that questionnaires via e-mail have disadvantages, as e-mail might not be trusted. The students might not trust that their responses will be regarded as confidential.

1.4.1 Population and sampling

Only PGCE students in the department of postgraduate in Education at the CUT were invited to participate, thus they constituted the study population. In the year 2018, approximately 118 PGCE students were registered in the Department of postgraduate Studies in Education at the CUT. "For smaller populations, say N=100 or fewer, there is little point in sampling, and surveying the whole population" is recommended (Gay et al., 2009, p.31). Thus, the sampling method used was total population sampling, which is a type of non-probability sampling.

1.4.2 Data collection

The questionnaire used to gather data were divided into five parts: Parts A - E. Open-ended and closed ended questions were included.

Part A required background information about each respondent, for instance the degree or certificate registered for, and which resources the PGCE students used. Part B required information to establish whether PGCE students were satisfied with the present library services regarding the use of electronic databases. Part C demanded information to determine PGCE students' behaviour regarding e-resources and which databases they used, as well as the problems the PGCE students experienced when they used the e-resources. The purpose of Part D was to determine how useful e-resources were for the

PGCE students, as well as the problems encountered when retrieving e-resources. Part E was to suggest recommendations to improve the e-resource services in the library.

1.4.3 Data analysis

The Statistical Package for Social Sciences (SPSS) was utilised to analyse data. Data were sorted, coded, and analysed with the use thereof. Descriptive statistics, calculation frequencies, averages, measures of central tendency, and comparisons were done.

1.5 SIGNIFICANCE OF THE STUDY

This study serves as a guide for access to and use of e-resources at the Central University of Technology (CUT) library because no study has previously been done at CUT library regarding the e-resources. The findings of this study help to determine the strengths and weaknesses of the usage of e-resources by PGCE students in the department of postgraduate studies in education at CUT. It also assists the library in determining what specific areas need more focus. The research identifies the gaps the library needs to fill regarding the enhancement of information searching skills for library users.

1.6 DELIMITATIONS AND LIMITATIONS OF THE STUDY

The study is geographically restricted to only CUT library. The study did not focus on all the postgraduate students who are using the library's e-resources. The study focused on a portion of postgraduate students. The results cannot be generalised.

1.7 ETHICS STATEMENT

At all times, the researcher adhered to the ethical guidelines of the research committee of the CUT and UWC. Consent of each participant was obtained and each person was treated with respect. The participants were not forced or bribed to participate in the

research project. The participants had the right to withdraw from the research at any time. The respondents were anonymised and their responses were treated with confidentiality.

1.8 CHAPTER OUTLINE

Chapter one provides a short introduction to the research topic, explains the rationale behind the research and provides a background description of the study. Chapter two concentrates on an analysis of relevant material and includes studies that have used the Technology Acceptance Model as theoretical outline. Chapter three is about the research design and methodology utilised in the study. Chapter four presents and interprets the data obtained from the questionnaire responses. Chapter five focuses on detailed discussions of the findings. Chapter six presents the summary, conclusion and recommendations for further studies.

1.9 SUMMARY OF THE CHAPTER

This chapter introduced the study and provided the background and rationale of the study. The study's significance, problem statement, objectives, research questions, and theoretical framework were presented. Definitions of important terms relevant to the study were listed, and the research design and methodology, data collection, data analysis and the ethics statement were described. The next chapter presents the literature review.

CHAPTER 2
LITERATURE REVIEW

2.1 INTRODUCTION

To understand the known topic and in which aspects the researcher can be valuable, a literature review needs to be conducted. A literature review should go beyond merely describing other people's research. It should analyse and critically evaluate the methods and results and apply it clearly to the topic (Jensen & Laurie, 2016). The researcher should include a review of the relevant literature in the study.

A literature review determines whether the topic is worth studying and insight into ways in which the researcher can limit the scope where needed. The term 'literature review' is the process involved in creating the review that appears in your dissertation or thesis. It is an ongoing activity starting when you pick up the first book or article related to your research and continues until the day you finish the final draft.

First, the literature review assists the researcher to create research questions; and simultaneously, theories related to the current research study and the methodology useful for your research, may be discovered (Ridley, 2012). Similarly, according to Machi and McEvoy (2016, p.5), "a literature review is a written document that represents a logically argued case founded on a comprehensive understanding of the current state of knowledge about topic of study". This case establishes a convincing thesis to answer the study's question.

2.2 THEORETICAL FRAMEWORK

"Theories arrange sets of concepts to define and explain some phenomenon. Theory consists of plausible relationships produced among concepts and sets of concepts. Without a theory, such phenomena as death tribes and families cannot be understood. In this sense, without a theory there is nothing to research. So, theory provides a footing for considering the world, separate from, yet about, that world. In this way, theory provides

both a framework for critically understanding phenomena and a basis for considering how what is unknown might be organized" (Silverman, 2017, pp.145-146).

According to Flick (2014), a theory is a conceptual model or understanding of some phenomenon, one that not only describes, but explains and clarifies why the phenomenon is the way it is. We believe that every theory is partial and incomplete, a simplification of the complexity of that phenomenon, and that there can be more than one valid theory of any phenomenon.

2.2.1 Technology Acceptance Theory (TAM) model

TAM is a proper theoretical framework to use, as it is recognised and used regularly, and an acknowledged theory in information systems (Kanat, 2009). This indicates that many post-graduate students use e-resources, and according to the TAM model, a person will likely use technology, because of its easy use (Davis et al., 1989). Through using this theory, the researcher wanted to study and determine the use of e-resources by postgraduate studies.

TAM guided the study, as the researcher investigated the PGCE students' attitudes towards the use of e-resources regarding to their perceived usefulness, as well as the accessibility of information technology in their academic studies. The theory also helped in identifying the external variables that impacted these attitudes, which are library support, and individual characteristics, including computer training and experience.

This theory was selected, because it has been extensively received and utilised by researchers doing similar studies in e-resources locally and in developed countries.

In 1989, Davis used TAM to clarify the influence of computer attitude, as shown in the sketch. TAM's aim was to clarify the overall factors of the acceptance of the computer system, indicating users' attitudes through the wide spectrum of end-user computing technologies and user individuals (Davis, 1989).

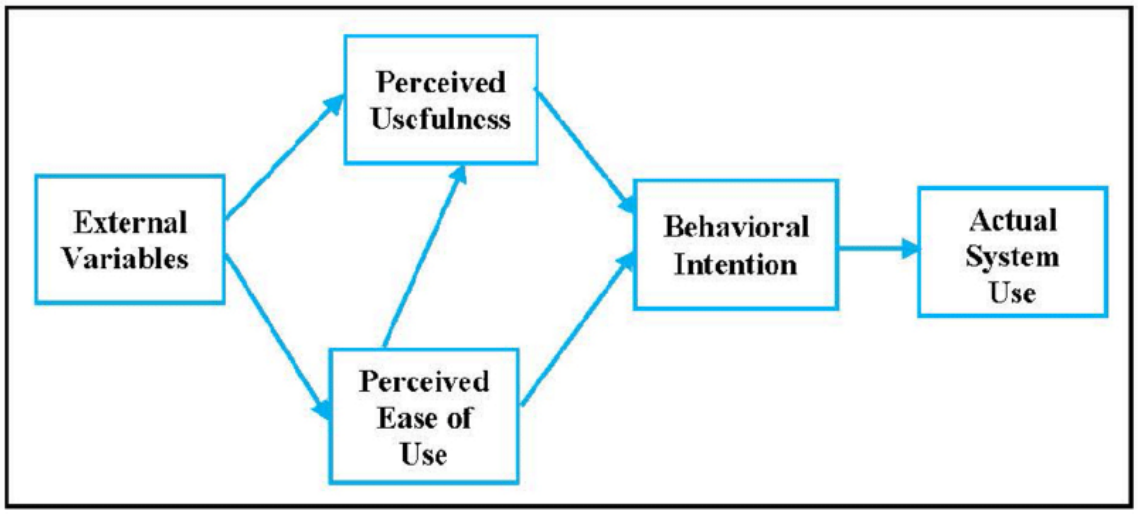


Figure 2.1: TAM main model (Venkatesh & Davis, 1996, p.453)

The TAM main model involved and examined two main principles: Perceived Usefulness (PU) and Perceived Ease of Use (PEU). PU is described as the possible personal user's chance to make use of some electronic system. PEU indicates that the user requires the system should be easy (Davis, 1989). The last form of the TAM model was formed by Venkatesh and Davis (1996). Afterwards both PU and PEU were perceived to have a straightforward impact on user's attitude, consequently removing the necessity to change their behaviour.

Of the research completed on the usage of e-resources, only a small number focused on postgraduate students. Most part-time students attend classes and to the library after office hours, and little is known about their attitudes towards e-resources and what affects their usage of electronic media or what their preferences are when utilising e-resources in the library. Furthermore, most research included electronic databases, but not much has been said about e-books. Currently the CUT Library has approximately 2500 accessible e-books for library patrons via the library electronic system called Techwiz.

Many changes and evaluations occurred regarding TAM (Chuttur, 2009; Davis et al., 1989; Venkatesh & Davis 1996), as well as disapproval of TAM. One of the weak points

of TAM is recognised as the usage of “self-reported data to measure system use instead of actual use data” (Chuttur, 2009, p.9).

Self-reported data can be one-sided and unreliable in calculating the definite use of a computer system. Nonetheless, the overall agreement within the information system society confirmed fact that TAM is a helpful theoretical model assisting the researcher to determine user behaviour in information system establishment, being empirical research, with the resources utilised inside the model after affirming to be of quality and having trustworthy statistical results (Legris et al., 2003).

The literature review in this chapter is focused on research already done on technology and the usage of e-resources by postgraduate students. Most of the literature that was assessed, came from developing countries, namel India, Nigeria, Botswana, Lesotho, South Africa, Uganda, Namibia, Zimbabwe, Turkey, and Iran.

South African research on the usage of e-resources by postgraduate students was done by Dolo-Ndlwana (2013); Hadebe (2010); Hamutumwa (2014); Idoniboye-Obu (2013); Mbasera (2012); Somers (2015); and Soyizwapi (2005).

The literature examined in this chapter is systematically organised around the following themes:

- Awareness of e-resources among postgraduate students,
- Challenges students encounter when accessing e- resources,
- Benefits of e-resources for postgraduate students, and
- Attitude of students towards e-resources

2.3 AWARENESS OF E-RESOURCES AMONG POSTGRADUATE STUDENTS

Awareness of e-resources involves making postgraduate students cognizant of the existence of e-resources. Bentil (2020) believes that it is significant to create awareness of the service rendered to guarantee sustainability of such service. This will assist university libraries to be aware of underutilised e-resources, and these academic libraries

will be able to promote these e-resources that underutilised by targeting relevant academic students to utilise them (Bentil, 2020).

According to Soyizwapi (2005, p.51), “postgraduates became aware of the availability of electronic databases from a variety of sources such as friends, library orientation programmes, and academic staff. It was also found that search engines were identified as resources that were very popular with almost all the students.”

Ali (2005) recounts a study that focused on the use of Electronic Information Services (EIS) among the users of the Indian Institute of Technology (IIT) library in Delhi, India. The study showed that 95% of users were aware of the e-resources offered by the library. Attesting to that Madhusudhan (2010), investigated the “availability and use of e-resources” and found that e-resources are well-known in doing research and writing academic papers.

Rehman and Ramzy (2004) investigated the awareness of e-resources among health academics in Kuwait University. Their notion was that poor awareness and lack of skills were the main reasons for the students underutilising e-resources. They conducted a research study by means of questionnaires. The aim was to investigate why the usage of e-resources was poor at Kuwait University, and, if resources were used, what kind of e-resources were used.

Oyedapo and Ojo (2013), in their study on the impact of e-resources, perceived that the utilisation of e-resources at Obafemi Awolowo University, Ile-Ife, Nigeria was very slow. A structured questionnaire examined the attitudes of postgraduate students who utilised the library continuously. Out of 100 questionnaires, 83 were completed and returned. A suggestion was that information literacy skills should be taught in the library via user education programmes, which would help students to be aware of the e-resources and subsequently increase such sources’ usage.

Mishra et al. (2014, p.298) conducted a study “to investigate the level of awareness and utilization of electronic journals or e-journals among research scholars of Banasthali Vidyapith (BV) in India”. One hundred and fifty questionnaires were disseminated, and 96 questionnaires were returned. The outcome stipulated that 35.42% of academics knew

about the e-journals in the library. An important result was that the same number of students knew about the e-journals. However, the researchers suggested that the awareness of the journals should not only be advocated by library staff, but the academic departments should also raise awareness of e-journals to students to fulfil the information needs.

The result on a study is done by Dolo-Ndlwana (2013) at CPUT, showed that poor awareness of e-resources was caused by students with insufficient time. Students were not aware of the e-resources available in the library, but various students recommended a few things that could be done to raise awareness, namely orientation and training so that they could use e-resources successfully (Dolo-Ndlwana, 2013).

Harle (2009) is of the opinion that even though e-resources are accessible at many academic institutions, usage is very low by the library staff and its patrons. The researcher can confirm that many academics and postgraduate students are not always aware of the availability of e-resources, and therefore uncertain of the value of e-resources. Many do not know how to retrieve them.

Students do not use all available e-resources and they are likely to restrict themselves to known databases. This shows that students are not aware of the resources that are new, because they stick only to familiar resources (Toteng, 2010).

In a study by Somers (2015) about the use of e-resources by postgraduate students and academics at the graduate school of business at the University of Kwazulu-Natal, the results indicated that most of the respondents were aware of e-resources, however it was indicated that it was important for postgraduates to have more training to improve their skills when utilising e-resources.

Akpojotor (2017) believes that postgraduate students' awareness of the ease of accessing e-resources will establish whether they will utilise the e-resources or not. In other words, students, who perceive e-resources as easily accessible, will use them, while the others who regard them as difficult, will avoid them.

From the recommendations given by literature regarding the awareness of e-resources, it is evident that academic libraries should establish awareness if they want to ensure

increased levels of e-resources usage. The transfer of relevant skills is necessary (Hamutumwa, 2014).

2.3.1 Challenges students encounter when accessing e-resources

Chaputula (2012) indicates that the ICT infrastructure at Mzuzu University in Malawi was below standard, because when they did research on ICT uses, students' challenges were high. However, there were challenges preventing students from retrieving e-resources, because of poor network infrastructure. There too little computers, expensive internet retrieval was costly, and erratic electricity supply was erratic. Postgraduate students lacked the necessary computer skills. The study done by Dolo-Ndlwana (2013) at CPUT confirms Chaputula's (2012) findings that students did not have adequate computer skills to use the e-resources.

Restricted access to ICT infrastructure hinders the successful use of e-resources. Similarly, there are other matters that may prevent a student from successfully utilising e-resources, namely passwords, lacking knowledge to search for e-resources and being computer illiterate (Hamutumwa, 2014).

According to Hamutumwa (2014, p.64), other common problems with e-resources are slow connectivity speed; "lack of awareness about statutory provision for accessing e-resources by the institutions", challenges with technology; inadequate e-resources, institutions are not sure of the sustainability of access; e-resources are expensive and there are no legal terms.

A similar study by Shukla and Mishra (2011) showed that most academic institutions have a challenge regarding unstable internet connections.

Madhusudhan (2010) claims that slow internet speed proves to be a recurrent problem. Likewise, he says that it takes time to see or download pages and to get relevant resources. He adds that often much information is found, but the students find it hard to successfully use e-resources, because of poor computer skills. Mulla (2011) indicates

that most academics have similar challenges, because of lack of training regarding the access to and retrieval of e-resources.

Similar challenges were found in a study done by Idoniboye-Obu (2013) on the use of library resources by doctoral students at the University of Kwazulu-Natal College of Humanities at the Pietermaritzburg Campus. An open-ended question asked the doctoral students to state the major challenges when using the electronic databases at the UKZNP Library. Of the 99 respondents, 51.5% provided the following challenges:

- Many important journals and books are not subscribed to for electronic use: ten (19.6%)
- Very slow connections due to server capacity: nine (17.6%)
- Some databases do not have full text but only abstracts: eight (15.6%)
- Password issues when using remote access: seven (13.7%)
- Long queues to use the computers: five (9.8%)
- Did not know how to use the electronic databases: four (7.8%)
- Selecting the right keyword to search the databases: four (7.8%)

Hamutumwa (2014) explains that in Ghana, the ICT services in libraries were inadequate, because of expensive ICT infrastructure and lack of technical skills. Similarly, Enakrire and Onyenania (2007) claim that problems hindering the retrieval of e-resources are: financial challenges; no proper training on how to use and search the internet or there is no awareness of which websites/search engines to search on for; and students did not know how to use computers successfully.

Edem and Egbe (2016) also found that despite the huge drive to utilise e-resources, postgraduate students still have problems usint e-resources. The problems differ from not having computer skills (31.54%), poor network (29.05%), the internet is sometimes unstable (17.28%), electricity disruptions (11.20%) and the information in the e- resources is irrelevant (10.37%). The academic library had enough computers to accommodate their users. However, (63.09%) “of the respondents had lack of computer skills training which may have been responsible for identifying lack of computer skills as a challenge by majority of the respondents” (Dolo-Ndlwana, 2013, p.41).

The main problems of not retrieving e-resources for research purposes at the University of Calabar Library were because of inadequate computer skills and slow networks. This is accordance with the research of Egberongbe (2011) and Komolafe-Opadeji (2011).

The study that was done by Somers (2015) at the University of KwaZulu-Natal indicated that many postgraduate students retrieved e-resources remotely via off-campus access and via the library webpage. The challenges that the students encountered when retrieving e-resources were: “limited off-campus access”, “not sure which database to choose”, “password requirements”, “slow internet connection” and “limited of campus access” (Somers, 2015, p.140).

Ankrah and Atuase (2018) claim that the significance of e-resources in academic libraries and protecting their utilization looks discouraging. Postgraduate students’ attempts to utilise e-resources for their research work were thwarted by various challenges regarding retrieval and utilization. As a result of these problems, university libraries and information centres must improve their e-resource services. It is also important to recognize the barriers users face in retrieving these e-resources.

Research also showed that the majority of students regard information from the internet recent and simple to access, unlike sources in print. Nonetheless, the outcome demonstrated that while students favoured the internet, its successful usage was prohibited by various issues, namely poor network, little internet retrieval, and no computer skills. The study suggested that users should go through simple internet training to learn how to search for information. The study also suggested that information literacy must be included in the university’s curriculum. Furthermore, conscious support to establish awareness on the accessibility of e-resources, more especially in academic libraries, must be given (Adeleke & Nwalo, 2017).

Therefore, effective computer skills are very important, because computers are the most important way in which e-resources can be retrieved. The speed at which e-resources are retrieved and used by postgraduate students depends on issues concerning users, more especially computer skills. Effective use of e-resources by postgraduate students at the University of Ibadan was hindered by some issues. The power supply was continuously interrupted and was named as the biggest problem amongst other issues,

namely lack of speed and not enough computers, access of records with high relevancy and poor accuracy, accessing documents with appropriate information, lack of searching skills to access information successfully and effectively, and students have elective information technology skills to access the internet successfully (Adeleke & Nwalo, 2017).

The challenges are as follows: there are insufficient training programmes; the e-resources needed at the university are unavailable and because of the poor level of local information regarding the e-resources, the university library is not publishing relevant information that is accessible on the e-resources. Furthermore, the e-resources are not organised properly there are not enough workstations to retrieve e-resources and the information is irrelevant to local academic research.

These results were similar to those of Radijeng (2007) who, in his study on Demand for Electronic Information at the University of Botswana, reported computer challenges, poor infrastructure, and inadequate computer skills, limited printers and printing opportunities, students' fear to use computers, irrelevant contents to the local needs, economic problems and e-resources access problems. Following are constraints of e-resources: lack of proper arrangement of legal information resources, poor description on legal information sources, lack of online help, poor website design, too many login requirements, lack of expertise in using the databases, lack of printing provision, and confusing search screens (Adeleke & Nwalo, 2017).

Bhatt and Rana (2011) mention known challenges with e-resources, such as poor computer speed, poor connectivity, unawareness regarding the constitutional establishment for retrieving e-resources at the universities, computer challenges, insufficient e- resources, mistrust in the sustainability of e-resources, e-resources are expensive to buy and there are no legal conditions.

In Dhanavandan et al.'s (2012) study at the Krishnasamy College of Engineering and Technology Library, it was suggested that many users were happy with e-resources in the library, although they had challenges of copying and inadequate skills. Bashorun et al. (2011) posit that the use of e-resources by academic staff at UNILORIN was poor, and that would impact negatively on the learning and research stages, as shown in the mission statement of the university. Poor usage was shown for e-resources, bibliographic

databases, and e-journals. This behaviour was caused by students' ignorance of the e-resources available in the library. Likewise, the outcome of the research proved that academics at Unilorin appeared to be furnished with reasonable computer skills that should assist them to look for and use e-resources (Dolo-Ndlwana, 2013).

E-resources may be accessible in the library and even be applicable to the students' courses, but students may not be able to retrieve them because of inaccessibility.

Evidently challenges that are faced regarding the retrieval of e-resources include, inadequate infrastructure, poor internet connection, problems regarding online database subscription; policies that are utilised by the library regarding e-resources usage and behavioural differences of library staff in helping library patrons to get access to the information.

Numerous issues have been recognised in the research that deter students from using e-resources successfully. They involve poor information literacy skills, lack of awareness and accessibility of e- resources. Conventionally, university libraries have offered much more print material than e-resources. Nonetheless, technological innovations have created a stir of new innovations in information access and retrieval.

"Furthermore, another challenge doctoral students encountered was that some of them have been out of the university for a while and so they may not be computer literate and at the same time technologically inclined. This would be a challenge to them and so they needed to undergo online information training to be able to search for material for their studies continuously. They do not have time constraints as much as other students in their undergraduate studies or honours and masters, since doctoral students have three years full-time or five years part-time to complete their studies" (Idoniboye-Obu, 2013, p.9).

A study carried out by Soyizwapi (2005) on the use of electronic databases by postgraduate students in the Faculty of Science and Agriculture at the UKZN, Pietermaritzburg Campus, found that 83% of the students used electronic databases. Some of the problems identified by students in this study indicated password problems

when accessing databases; slow internet; insufficient bandwidth and limited off-campus access.

Hartmann (2001) reported in his study of the University of Ballarat, Australia that because of the challenges postgraduate students face in accessing e-resources, they did not know how to find e-resources from the library.

In a study conducted by Barfi et al. (2018) at the University of Cape Coast, Ghana, the research was about the accessibility of, and postgraduate students' use of e-resources there. The results showed that there were not enough computers in the library according to 37 (8.0%) of the postgraduate students. Forty-six (10.0%) did not know how to use e-resources, because of lack of training, while the research also indicated that postgraduates had insufficient skills to search for information. Also, 128 (27.8%) showed that low internet connection caused them not to utilise e-resources, while 82 (17.5%) of the respondents indicated challenges regarding the retrieval location, and 95 (20.7%) complained about the electricity disruption at any time and 15 (3.3%) of the postgraduates mentioned that the library did not subscribe to many titles.

These challenges were echoed by Emorjoho et al. (2012), Ivwighreghweta and Onoriode (2012), Ogbomo and Ivwighreghweta (2011), and Okoye and Ejikeme (2011), who stated intermittent electricity supply, insufficient skills for internet searches, and lack of infrastructure, as the main challenges the students faced when utilising e-resources. This study is also supported by the findings made in the research by Mirza and Mahmood (2012). In their study of Web-based services in university libraries in Pakistan, it was found that students encountered problems in using e-resources.

Additionally, Mirza and Mahmood (2012) indicated in their research that 96 out of 800 (12%) students reported a need for the library to market e-resources and their services; 93 (11.62%) respondents showed that information technology infrastructure was insufficient; 75 (9.40%) mentioned poor computer skills of library employees in reader services; 55 (6.90%) said that students did not have the necessary skills to use e-resources; while 52 (6.50%) postgraduates lamented the behaviour of the library staff who did not encourage students to utilise e-resources and their unwillingness to assist patrons to access sources. Omeluzor et al. (2016) indicated that students said that e-

resources were not organised properly, and it was time consuming to search for e-books and e-journals. This study corroborates Gakibayo et al.'s (2013) study findings that students preferred internet search engines, because they claimed that they were easier to use than library subscribed e-resources.

The poor usage level of e-resources, more especially, databases with full texts, resulted from postgraduate students not knowing how to search for information. It is important that universities should commit to conquer the recognised challenges to the usage of e-resources by postgraduate students to stay relevant in the present world of teaching and learning research (Adeleke & Nwalo, 2017). These results concur with the research of Bashorun et al. (2011) that most postgraduate students are not utilising e-resources. The authors suggested it was because there was no time to use e-resources, because of teaching, students were unaware of the e-resources available at the library, electricity disruption at any time, poor communication, poor network, and students did not know how to search for e-resources.

All these were shown by the authors Akpojotor (2017), Ankrah and Atuase (2018), and Gakibayo et al. (2013), and Omeluzor et al. (2016), as challenges that are impacting negatively on postgraduate students' experience towards the easiness of e-resources. The way the students see the library e-resources is very important, because it determines greatly the way they will utilise them.

2.3.2 Benefits of e-resources among postgraduate students

Current and complete information can be established in e-resources, which can benefit postgraduate students. Ankrah and Atuase (2018) concur that the use of ICT in library and information services assists in supplying appropriate information in universities to support and improve research work and output. The capability to utilise the computer to look for information relies on the knowledge of the user and awareness of the search system. Being able to find, recognize, access and handle information successfully, can be an acquired skill that will assist in future learning. It is important for students to be able to use computers to get the skills which are part of information literacy to retrieve

information and become successful in using e-resources from different locations for academic reasons (Ankrah & Atuase, 2018).

E-resources give space for resent information to be retrieved quickly, timely and distantly without a need for face-to-face interaction with the library as in conventional librarianship (Barfi et al., 2018).

The perception of the postgraduate students regarding e-resources as inaccessible, must not be exaggerated, because it says a lot about the foundation of their academic success regarding the push of e-resources (Akpojotor, 2017). There are many explanations for the importance of e-resources, specifically for postgraduate students' academic work, projects and research, which will assist them to complete their research work sooner and successfully.

Tyagi (2011) reported on the causes why postgraduate students use e-resources. His selected sample consisted of scientists, pharmacopoeia associates and scientific assistants. The results from the research showed that the main reason for utilising e-resources was that most of the postgraduates used e-resources to publish their research papers and for their courses.

The results for the postgraduate scientists from the Government of India (GOI) departments indicated that all of them hundred percent (100%) accessed e–resources to continue academic work, for dissertations, creating research work to be published, and for their coursework. Scientific assistants utilised e-resources mainly for coursework and it was indicated that postgraduate students identified e-resources as helpful to their research work. Therefore, the postgraduate students utilised e-resources grounded on perceived usefulness.

According to Akpojotor (2017, p.8), there is an important correlation between postgraduate students' of "library and information science perceived usefulness and ease of use of e- resources". The ease and importance of use of e-resources of postgraduate students of Library and Information Science is evident.

Sharma (2009) expanded that most of the postgraduate students chose to utilise e-resources, over print material, because 39 (75%) of the postgraduates had the impression

that e-resources save time, they are simple, and 34 (65.38%) respondents elaborated that e-resources are valuable and have up-to-date information, that is 27 (51.92%) and 25 (48.08%), respectively. Sixty percent (60%) of the researchers chose to utilise e-resources, because e-resources save time, contain up-to-date information and are therefore very helpful. The majority (80%) of research academics utilise e-resources because of ease access, while six (11.54%) postgraduate students and twelve (12) forty percent (40.00%) researchers use e-resources because they are inexpensive.

Only the minority, namely three (5.77%) of postgraduate students feel that e-resources are not valuable. These results clearly indicate that postgraduate students want to utilise e-resources (Akpojotor, 2017).

The study reports that postgraduate students in Library and Information Science in Southern Nigeria perceived the utilisation of e-resources fast and accessible.

It was observed in the Technology Acceptance Model (TAM) that in support from the relevant organisations, the most crucial element is to determine the use of e-resources. Organisational support involves offering compulsory infrastructure, rewards, teaching, and making the environment beneficial to transformation that supports people and groups in an organisation to acknowledge computers and technologies that are interrelated (Okite-Amughoro et al., 2015). This indicates that the individual's behaviour in an organization regarding e-resources to be used successfully, basically relies on the support granted in relation of resources that are accessible, teaching on how to use these resources, perceiving dedication, and assisting the students with this technological transformation (Okite-Amughoro et al., 2015).

LISBDNETWORK (2016) makes a comparison between print and e-resources to show the benefit of e-resources: e-resources has various selections that exist, but not all printed texts are searchable directly. E-resources can be retrieved at any time. With e-resources you get the references online. For print material students must go to the library to look for the book on the shelves to get references, but with e-resources students can retrieve them from home; with print they must wait for the library to open to access the print material.

Dadzie (2005) states that e-resources are helpful in supplementing printed documents that are found in the outdated library. These benefits comprise of information retrieval limited to the user, because of their environmental limitations or investments and giving of broad connections to more resources or linked subject. Nonetheless, computer skills and searching methods are needed to look for resources successfully and this has an effect on students' attitude towards e-resources.

2.3.3 Attitudes of postgraduate students towards e-resources

The postgraduates' views are an important form of analysing the efficiency of e-resources, as well as assisting several needs of students that must be met and examined. "While user surveys can never tell the whole story of how patrons are responding to a library service, they can provide valuable ideas about what does and does not work" (Adeleke & Nwalo, 2017, p.10). It is only with students' attitude towards e-resources that helpful answers can be given to deal with any possible user reactions, either positive or negative.

Kibirige and DePalo (2000) state that most students are exposed to computers early on. Nonetheless, they enter universities with a variety of computer and internet-searching abilities and knowledge. Students might not know how to use e-resources, or what resources are available in the library. Consequently, it is important to recognise what traits will encourage some postgraduate students to broaden their knowledge and discover e-resources while other students will not. This will impact students' attitudes towards e-resources.

Technological applications are based on two basic beliefs: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Therefore, TAM states that individuals will want to use a technological innovation firstly because they believe it will help them perform their jobs better. This first variable is referred to as Perceived Usefulness (PU) (Davis, 1989).

The study at Makerere University in Kampala, Uganda by Okello-Obura and Magara (2008) on the Library and Information Science (LIS) postgraduate students' answers concerning their attitudes on e-resources, indicated that most of the postgraduate

students (72%) had a strong sense that the quality of their research work will suffer without e-resources. They trusted that the e-resources would assist them in performing well in their research (Adeleke & Nwalo, 2017). So, their attitudes were positive towards e-resources.

Al-Gahtani (1998) used the TAM as a base model to produce a model answering the basic questions of the research: why users accept or reject information systems and how is user acceptance affected by system characteristics, perceived usefulness, and perceived ease to use, as well as attitude towards acceptance behaviour. The results demonstrated the advantage of the TAM applied to IT. The findings suggested that systems' feature, perceived usefulness, and easy use are the most influential variables in IT acceptance, respectively. He suggested that systems' features and functionality must be emphasized to potential users. While ease of use must not be overlooked as a moderate determinant of IT acceptance, efforts to be undertaken to improve easy use, such as training, would enhance the self-efficacy of a system's users (Hadebe, 2010).

Secondly, it theorises that usage of new technology will also be influenced by the users' Perceived Ease of Use (PEOU), which is described as the extent to which a user believes that using a particular system will be free from effort (Davis, 1989). Thus, even if people believe that a given application is useful, they may also consecutively believe that the system is difficult and that performance benefits of usage are outweighed by the effort required to use the technological innovation. These can influence the students' attitude towards using e-resources.

Certainly, technology improved the usage, but it is vital to have knowledge on how technologically skilled environments are impacting academic students' attitudes about e-resources retrieval (Pawar & Moghe, 2014). The attitudes of postgraduate students towards e-resources retrieval are clearly evident when they cannot access the e-resources, for example, in circumstances where there are insufficient computer networks to retrieve them. According to Robinson (2006), students' positive attitudes in using e-resources can be affected by low internet connections. It is important that universities address the problem of access and the network speed in academic libraries.

The outcome of a research conducted by Malekani (2007) at Sokoine National Agricultural Library (SNAL), to determine student experiences and perceptions towards the internet for their learning needs, revealed that most students felt positive towards the internet and used it for academic purposes.

Dolo-Ndlwana (2013) concurs with Ansari that students need skills to use e-resources successfully, and their success relies on simple computer knowledge, what e-resources are available and how to access them successfully. Relevant knowledge and skills will assist postgraduate students to have a positive attitude regarding e-resources.

In principle, technology is comprehensively used, and it is very significant to realise how technologically rich environments are impacting student attitudes toward e-resources retrieval. Many factors influence attitudes. The introduction of open access journals and other resources for instance, is creating another attitude towards e-resources (Adeleke & Nwalo, 2017).

Attitudes towards e-resources can be affected by the challenges that students face when trying to access e-resources. For instance, if students struggle most of the time with passwords and they regard the databases as difficult to use, they might give up on the system, and their attitudes towards e-resources may be negative.

The attitude towards a particular phenomenon can enhance or ruin the human approach to such phenomenon. A positive attitude is widely recognized is a necessary for effective use and integration of information technology in teaching and learning (Akporhonor & Akpojotor, 2016).

An academic library has the duty to ensure that adequate information resources are provided to help postgraduate students conduct and facilitate their research work. Therefore, this would also encourage users to have a positive attitude towards the use of libraries' resources (Ankrah & Atuase, 2018).

In a study by Dolo-Ndlwana (2013) at CPUT, 17 participants were unable to retrieve e-resources, because of a lack of skills and insufficient bandwidth. Some participants complained of not getting relevant information when they needed it and they had to wait to purchase the documents, mostly journals. When the students tried to retrieve the

article, he/she could not get a full text, and had to pay to get the full text. These impacted on the students' attitude towards e-resources.

TAM helps to identify external variables that are important for users who are planning to use information technology (Jeong, 2011). Preceding investigations on the TAM, acknowledged three types of characteristics identified to impact the use of e-resources by students, namely personal circumstances, library environment and systems characteristics (Thong et al., 2002).

Ankrah and Acheampong (2017) did a study on students' use of e-resources in University of Professional Studies in Accra, Ghana. The head of the university indicated that postgraduate students had problems with e-resources. The cause of the problem was students' lack of self-efficacy, as they did not know how to use nor search for e-resources. The students' attitude towards e-resources was negative because of lack of expertise to access e-resources.

The study by Ankrah and Acheampong (2017) concurs with the study done by Soyizwapi (2005) at the University of KwaZulu-Natal, Pietermaritzburg, on the use of electronic databases by postgraduate students in the Faculty of Science and Agriculture. He found that training was still needed for the usage of e-resources. Also, there was a need to improve retrieval for all campus and off-campus users. It is important for academic libraries to focus on students who have difficulty in retrieving e-resources and who do not have self-efficacy, because these issues impact on the students' attitude towards e-resources in a negative way. Students then regard using e-resources as tedious and difficult.

It was observed in the Technology Acceptance Model (TAM) that the element that affects use and attitudes of electronic information resources most, is the support from the relevant organisations. This involves offering compulsory infrastructure, rewards, teaching, and making the environment beneficial to transformation that supports people and groups in an organisation to acknowledge computers and technologies that are interrelated (Okite-Amghoro et al., 2015). This indicates that the individual's attitude in an organization regarding available e-resources to be used successfully, basically depends on the support granted regarding resources that are accessible, teaching how to use

these resources, perceiving dedication, and helping with the ease of familiarising students with this technological transformation (Greenfield & Rohde, 2009).

Waldman (2003) stresses that students that are confident in using computers, will be those who discover new innovations, network or e-resources and the students' attitudes towards e-resources become very positive. Tella and Tella (2003) state that self-efficacy has an important connection with the academic success of students and attitudes towards e-resources. In a related study of library instructions and self-efficacy, Ren (2005) argued that there is a positive relationship among students' self-efficacy and using the library e-resources frequently. This will assist in changing students' attitudes towards e-resources and building students' confidence.

Swain and Panda (2009) argue that postgraduate students' attitude to e-resources is steadily changing. Singh (2009) claims that information technology has created incredible changes in the landscape, limitations and the way information is constructed.

Attitudes of post graduate students might be positive, and students will feel confident using e-resources when implementing computer skills (Renwick, 2005). Issues that will inspire students' attitude towards e-resources will be determined by how important the e-resources are to students, and whether they have found them to be helpful for purposes as needed by university libraries (Dolo-Ndlwana, 2013).

Ankrah and Atuase (2018) illustrate that students' attitudes will improve if academic libraries present an introduction to computer literacy courses to postgraduate students to make it possible for them to do their research studies without challenges. According to the TAM model, the postgraduates' attitudes will be positive if their attitudes are facilitated by increasing their ease of use and realisation of the usefulness of e-resources.

Colvin and Goh (2005) used the TAM to develop a basic theoretical model that would explain why individuals embraced or rejected new computer technology. The findings of their study generally supported TAM's hypothesis that individuals' acceptance would be facilitated by increasing its ease of use and usefulness. Their findings suggested that a strategy for even greater acceptance would be achieved by considering other variables, such as timelines and the quality of information provided by the new technology.

Hamutumwa (2014, p.32) “points out that electronic resources are the source of information that are explored through modern ICT devices and can be accessed simultaneously from infinite points by a great number of audiences”. It is therefore important for students’ attitudes to be assessed to understand their needs for them to succeed academically.

If students feel unsure when using computers, it will change their attitude towards e-resources, and they will rely only on print resources that they are comfortable with and it will not matter if the library spends much money subscribing to and buying e-resources and information technologies (Hamutumwa, 2014).

2.4 CONCLUSION

The literature review has clearly indicated that the majority of academics, researchers and postgraduates are utilising a range of e-resources for research work and personal needs. Research has shown that the level at which e-resources are utilised among postgraduates, academics, and researchers, is increasing.

CHAPTER 3
RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This chapter provides an overview of the research methodology and methods of data collection used for this study. The research methodology is a quantitative research method.

3.2 RESEARCH METHODOLOGY

Research methodology is the way of solving a problem and to explain how the research will be executed. There are many reasons why research methodology is important in a research study, some of which include the necessity for a researcher to plan and design a method for the problem identified or chosen. A researcher must consider various issues, such as the type of study to undertake, the suitability of the method chosen, the type of sample to be used and sample design (Yunus & Tambi, 2013). The research design also entails the understanding of the efficiency of the type of method, the type of data to be collected and understanding the purpose of a particular technique of analysis of the data used for the study.

3.3 RESEARCH PARADIGM

A research study starts with a selection of a topic or identification of a problem and a paradigm. Essentially a paradigm is the framework of worldviews, belief systems and values that guide researchers within the research (Tashakkori & Teddlie, 1998).

When a researcher conducts a research study, there are three main types of research methodologies/approaches that can be used. A researcher may choose to use either quantitative research, qualitative research, or a mixed methods approach (Ngulube, 2005). It is important to note that the approach for each type of research methodologies

differs concerning the method of data collection, sample design, and type of data collection instrument used (Yunus & Tambi, 2013). The research paradigm that was chosen for this study, was quantitative research.

3.4 RESEARCH APPROACHES

The three types of research methods, namely quantitative, qualitative, and mixed approaches are discussed in detail in the next sections.

3.4.1 Qualitative methods

The main characteristic of a qualitative method is that it is detailed and descriptive. In this type of study, the data are in the form of words, pictures and/or objects. The aim in qualitative research is to give meaning, share experiences, express perceptions, values, and beliefs (Kumar, 2014).

Qualitative research methods involve detailed interviews. The research findings can be influenced by feelings, emotions based on how the interviews were conducted and how the information was expressed and because of the design of the research methods, e.g., interviews. Usually, the sample sizes are quite small. This is the reason why it is not possible to generalise the research findings towards a large population. The purpose for the research findings is to create new ideas to improve and sort out problems, such as the planning of training programmes. The findings of qualitative research can be used to explore a larger, quantitative sample, for a more extensive research study (Yunus & Tambi, 2013).

The method that researchers choose depends on what it is that they would like to find out from the research being conducted. Neither of the two research methods, quantitative or qualitative, is better than the other; both or one may be chosen, but it depends on the research question (Silverman, 2017). A qualitative approach was not applied in this research study, however some of the questions in the questionnaire were qualitative. This

study used a quantitative approach, because it was more appropriate to the research problem.

3.4.2 Quantitative methods

Quantitative research design is clear, well organised, and their validity has been checked (Kumar, 2014). The predominant method of this study is a quantitative survey. According to Punch (2014, p.3), “quantitative research is a type of empirical research whereby the data are in the form of numbers”. Furthermore, the term ‘quantitative research’ is not only about collecting data in numerical form, but it also refers to the way of thinking (Punch, 2014).

A quantitative research study consists of a research design, data collection methods, instruments to be used, and sample design (Yunus & Tambi, 2013). Quantitative research methods use three fundamental research designs, namely observation, experiments in the laboratory field, and questionnaire surveys. Quantitative studies often pull a huge sample from the research results, and because of this, the outcome can be generalised. Quantitative methods use numbers and statistics so that the researcher cannot influence the outcome of the results. The data are presented in the form of statistical numbers and charts (Hyde, 2000).

The present study used a quantitative approach. The resolve for this method, was because of the fact that in quantitative research, the researcher can get information from many participants, which permits the researcher to have a respondent sample that is large enough to be representative of the researcher’s target group, which is the postgraduate certificate in education (PGCE) students. As a result, a survey with predominantly closed-ended questions was deemed most suitable for this research, according to this methodology. A quantitative approach was adopted for this current study, as emphasis was placed on measurements that are objective and the data were analysed in a statistical manner.

Bless and Higson-Smith (2013) point out that with closed types of questions, those taking part in the research, can give precise answers without any difficulty. With open-ended

questions, the freedom and flexibility allow the respondents to answer honestly and in any form. For instance, participants were asked to list their top three difficulties while using e-resources. It was agreed a few open-ended questions were more challenging to record and are time-consuming for participants to consider and complete (Maree, 2007), but they enabled the investigator to get true and comprehensive responses from participants.

3.4.3 Mixed approach

The words 'mixed methods' research is based on the combination of two methods, namely qualitative and quantitative in which both numerical data and narrative data are used. where methods and data are combined in a certain manner. "A single study that combines qualitative and quantitative data is mixed methods, but the term can also refer to a programme of several studies combining both types of data" (Punch, 2014, p.302). As Creswell (2014) and Plano Clark and Creswell (2007) note, terms such as *multimethod, integrated, blended,* and *combined* have been used, along with multi trait-multimethod research; methodological triangulation; multimethod logical research and mixed model research.

Mixed methods, pictures, and explanations can be joined together with quantitative, numerical data in a broad manner of the same issue that are being studied, which will make the outcome of the research results more generalisable for future studies and those that will be examined (Hesse-Biber, 2010). The mixed methods approach was not suitable for this study.

3.5 PRE-TESTING THE QUESTIONNAIRE

The study was conducted by means of a structured questionnaire. The questionnaire was pre-tested by administering it to 20 postgraduate students in the Language and Social Sciences Department in the Faculty of Humanities at the Central University of Technology (CUT), who would not be part of the study. Only nine of the 20 copies of the questionnaire

handed out, were returned. Changes made to the questionnaire involved correction of spelling errors, and the phrasing and terminology of some questions were adjusted. All surveys should be pre-tested before being put into practice (Fink, 2017). This exercise is necessary to determine whether additional questions are is needed, or if some questions should be removed. In pre-testing the researcher is concerned whether the respondents will understand the questions and whether the questions are sufficient (Creswell, 2014).

3.6 QUANTITATIVE VERSUS QUALITATIVE RESEARCH METHODS

The quantitative and qualitative approaches differ how the data are recorded. Many researchers, when collecting data by means of observation, tend to quantify their observations by using pre-coded forms, which is known as a survey (Frazier et al., 1999).

"Quantitative research observes the amounts (or quantities) of one or more variables of interest. In contrast, qualitative research looks at characteristics (or qualities), that may not be totally reduced to numerical values" (Leedy & Ormrod, 2014, p.95). The objective of quantitative research is to get a minor set of variables that will be able to analyse data as detailed as possible. "Qualitative research, on the other hand, involves experience with the participant, and it explores and understands how individuals or groups ascribe to a social or human problem" (Creswell, 2014, p.4).

There are advantages and disadvantages ascribed to both these methods. Nonetheless, the experienced social researcher must carefully choose the suitable research strategy in the context of the problem that is researched (Bless & Higson-Smith, 2013). The current study used a quantitative analysis approach to accommodate the huge population in this research. Equally important in terms of a quantitative approach, is that most of the questions posed were closed.

3.7 RESEARCH TYPE AND DESIGN

Research design is defined as a plan through which you decide for yourself and communicate to others your decisions regarding what study design you propose to use,

how you will collect information from your respondents, how you will select your respondents, how the information you will collect is to be analysed and how you will communicate your findings (Kumar, 2014).

Research design is supposed to justify the quantitative approach to give a specific direction for the procedures in a research study, to be unbiased, to be correct and be reasonable in answering research questions (Ankrah & Atuase, 2018).

A cross-sectional survey design was used for the current study. The objectives of the study, as shown by the research questions steered the choice of a questionnaire as the only instrument that was used for data collection. According to Creswell (2014), survey research enables the researcher to give numeric explanations, attitudes, or the viewpoints of the population by examining the sample. This approach enabled the researcher to ask questions to postgraduate students who were willing to participate in the study.

"One motivating factor for using a survey method is because, not only does it have origins in a post-positivistic tradition, but surveys also measure facts, attitudes, beliefs, opinions, characteristics, past or present behaviour, and expectations and knowledge through questions" (Hamutumwa, 2014, p.71).

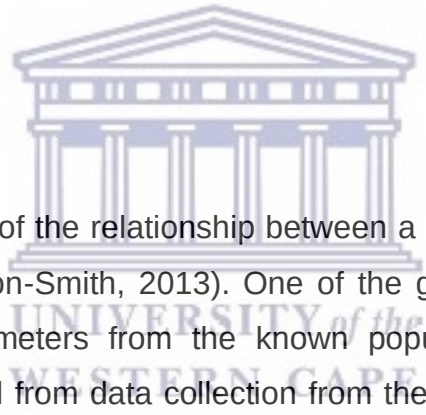
3.8 SAMPLING AND POPULATION

PGCE students constituted the population in the study who were a group of students from which the investigator wishes to derive the interpretations of results (Babbie, 2014). In this study, the population were PGCE students in the department of postgraduate studies in Education at the Central University of Technology. The problem is that if the population group is big, information cannot always be obtained from every individual in the group. As a result, the investigator relies on gathering data from a subset or segment of the population and then generalizes, depending on the outcome of the results. The sample refers to the population that is selected to participate in the research study, for example the population that was selected to take part in this study were students from the university, and as such, PGCE students from the department of postgraduate studies in education at CUT. The population that is chosen to be a sample for the research should

represent the group of population that is chosen to take part in the research. For this reason, sampling is essential in survey design (May, 2011).

As a result, the population is the most significant concept of the total target group that would be the focus of the study in an ideal world and the sample is the population that is being studied and from whom the information is being obtained (Punch, 2014).

The sample population for this research was chosen based on the research's main aim which is to look at how postgraduate students use the electronic databases at CUT. The population that was targeted comprised of 125 postgraduate students from the Department of postgraduate studies in Education at the Central University of Technology (CUT). The type of sampling that the researcher used for the study was total population sampling.



3.8.1 Types of sampling

Sampling theory is the study of the relationship between a population and the samples drawn from it (Bless & Higson-Smith, 2013). One of the goals of research is to infer unidentified population parameters from the known population parameter and test statistics, which are extracted from data collection from the population. The process of generalizing from findings based on the sample to the population, is called statistical inference. The two types of sampling considered here, are probability and non-probability sampling.

3.8.2 Probability sampling

Each sample has an equal chance of being selected in probability sampling. This sampling approach calculates the likelihood that a sample is representative of a population. There are, for example, 700 postgraduate students at a university. The method in which all 700 students at the university have a fair chance to be part of the research, is known as probability sampling. The main element of probability sampling is that each component in a sample frame should be familiar and have a measurable chance

of being part of the sample. This stipulation has nothing to do with wanting to be equitable (Terre Blanche et al., 2006).

3.8.3 Non-probability sampling

In a non-probability sampling technique, none of the population have the same chance of taking part in the research study. Non-probability sampling methods include mainly judgment. Individuals are chosen because they can be accessed without too much effort (Showkat & Parveen, 2017). In some cases, non-probability sampling can be useful and is regarded as a good method for choosing a sample. Bernard (2013) states that individual attributed data require probability sampling, while cultural data require non-probability sampling.

3.8.4 Different kinds of probability sampling

Simple random sampling, systematic sampling, stratified sampling, as well as cluster sampling are all forms of probability sampling.

3.8.4.1 Simple random sampling

Terre Blanche et al. (2006) explain that each sample has an equal chance of being selected in probability sampling, as each element is independent of the selection that was done earlier. The definition by Bless and Higson-Smith (2013) concurs with that of Terre Blanche et al. (2006) that simple random sampling is a sampling procedure which provides equal opportunity of selection for each element in a population. There are various techniques of selecting it randomly.

3.8.4.2 Systematic sampling

Systematic sampling is easy and an appropriate way of choosing individuals from a sampling frame, yet the outcome of the sample can be biased (Terre Blanche et al., 2006).

“A systematic sample can have a precision equivalent to random sampling” (Creswell & Creswell, 2018, p.150). In systematic sampling it is possible that measurements might not be correct.

3.8.4.3 Stratified sampling

Stratified sampling is a type of random sampling in which researchers firstly determine a set of “mutually exclusive and exhaustive categories” after which follows grouping the sampling frame by the categories, and finally “random selection is applied to the selected cases from each category” (Neuman, 2006, p.231).

3.8.4.4 Cluster sampling

In stratified sampling, clusters can be established based on geographical proximity or the same individuals who are correlating with the study’s main variable. It depends whether the clustering levels are divided into stages that are single double, or multiple clustering levels (Kumar, 2014).

3.8.5 Non-probability sampling

Non-probability sampling is non-random sampling. Kumar (2014) asserts that non-probability sampling plans do not get to choose components from the sampling population based on the probability hypothesis. Qualitative investigators also choose non-probability sampling, when one or more numbers of components in a population are unknown or the elements cannot be classified individually (Kumar, 2014).

Purposive sampling, snowball sampling and quota sampling are examples of non-probability sampling.

3.8.5.1 Purposive sampling

Non-probability sampling is favoured in exploratory research whereby the researcher uses a “wide range of methods to locate all possible cases of a highly specific and difficult-to-reach population” (Neuman, 2006, p.222). It is also called judgmental sampling (Babbie, 2014). Total population sampling is a type of purposive sampling where the whole population is examined. This study applies total population sampling because the entire population, PGCE students, is small.

3.8.5.2 Snowball sampling

This process of gradually accumulating a sufficiently large sample through contacts and references, is called snowball sampling (Terre Blanche et al., 2006). According to Babbie (2014), snowball sampling is utilised when members of a special population are not easy to find, such as individuals who are homeless, or immigrants with no documents. In snowball sampling, the researcher collects information from as many members of the target population as he or she can identify, and then asks certain people to give the information that is needed to locate potential participants that they might know (Babbie, 2014).

3.8.5.3 Quota sampling

This sampling method is a type of non-probability sampling method like stratified sampling. The aim is to select a sample that has the same purpose or that has the same quota of attributes as the entire sample in the sampling process, but rather than using random selection, in other words it depends on luck (Bless & Higson-Smith, 2013).

3.9 DATA COLLECTION

Data collection is simply a technique that is used to gather empirical research information. It is how researchers get their data which enable them to answer the research questions and examine the outcomes (Tashakkori & Teddlie, 2003).

3.9.1 Questionnaire

To answer quantitative questions, the researcher needs quantitative methods while to answer qualitative questions, the study will need qualitative methods. The matching of questions and approaches is much more critical in today's research setting, where quantitative and qualitative methods are often used together (Punch, 2014).

A "questionnaire is a reformulated written set of questions to which respondents record their answers usually within rather closely defined alternatives" (Sekaran & Bougie, 2013, p.147). The items in the questionnaire in this research were modified from previous research found in the literature on e-resources use. As a result, the primary information collection method was regulated, with scales that were obtained earlier on positive responses "internal reliability, convergent and discriminant validity" (Koenig-Lewis et al., 2010, p.418).

According to Deng (2010), questionnaires may be structured or unstructured. A standardised questionnaire gathers all the questions and answers in the form of a single or multiple response. Participants' interpretations are kept to the limit. A standardised questionnaire makes it easier for participants to complete it quickly, resulting in a greater response rate and the researcher can code and analyse them. A more structured questionnaire was chosen for this research.

"In contrast, an unstructured questionnaire allows respondents to openly give their honest answers in their own words thereby expressing and revealing their thinking processes" (Maree, 2007, p.161). While this may cause a very low response rate and needs more time for recording the answers, there are advantages, because they give a comprehensive insight into the research problem.

In this study, a questionnaire was administered to PGCE students in the department of postgraduate studies in education. The questionnaire was the instrument used to obtain the PGCE' own views on databases. Section A of the questionnaire deals with demographic questions, asking whether PGCE students use e-resources, and how often they use specific e-resources. Section B asks PGCE students where they access e-resources, about their information searching and ICT competencies, as well as their preference for print or e-resources. Section C enquires whether PGCE students are familiar with e-resources, how they came to know about these e-resources, for what purposes they access e-resources and, if they are not using the e-resources, to give reasons why. Section D deals with the importance of using e-resources, asking PGCE students whether e-resources are useful to succeed in studies, and what challenges they encounter when they use e-resources. In Section E PGCE students are requested to suggest recommendations how to improve the usage of e-resources.

3.9.1.1 Advantages of open-ended questionnaires

The respondent can give his or her own answers to the questions. Open-ended questionnaires are good for investigating the hypothesis regarding opinions. They give the researcher a chance to ask more questions, especially in an interviewing process.

3.9.1.2 Disadvantages of open-ended questionnaires

It is more time-consuming to process the responses of an open-ended questionnaire, as they first need to be coded before they can be analysed. This coding method typically necessitates the researcher explaining the meaning of the results, which may lead to confusion and researcher bias. It is also possible that some respondents will provide responses that are not important to the researcher's goal (Babbie, 2016).

3.9.1.3 Advantages of closed ended questionnaires

The participant is given a choice from a list of options presented by the investigator. They are common in the research design, because they provide more consistent results and are easier to process than open-ended questions. Closed-ended answers are often directly transferable to a computer format (Babbie, 2016).

3.9.1.4 Disadvantages of closed ended questions

According to Babbie (2016), closed-ended questions have a drawback, as they rely on how the researcher arranged his answers. If responses are given to relevant questions, and the questions are clear then there should not be any problems. In some cases, the way the researcher structures the research responses may leave out some crucial responses. The manner in which the researcher records the responses could result in the omission of critical responses, which the researcher deemed to be important.

3.9.2 Data gathering methodology

In the study a questionnaire was administered to the PGCE students. The questionnaire was the only means of obtaining their respective views on e-resources. The questions contained both structured (closed) and unstructured (open) questions. Open-ended questions result in more qualitative data, is time consuming to be completed by the participants and are challenging to be analysed by the researcher. Combining the two types of questions in the questionnaire could provide a more complete image of the research material (Fink, 2017). This enriched the data collected and the subsequent findings.

The researcher intended to administer the questionnaire via electronic mail only. But this became a challenge, because the CUT registrar advised that, in terms of the Protection of Personal Information Act (POPI), she is not allowed to give the researcher students' email addresses without their consent. She advised the researcher to discuss the matter with the Dean of Humanities, to find ways of requesting students' consent. The Dean of

Humanities directed the researcher to the student coordinator. The student coordinator allocated two student assistants who were studying PGCE to assist the researcher.

The researcher used the two students as her research assistants to help with gathering of information. Some participants agreed for the questionnaire to be sent to them via WhatsApp, others agreed for the questionnaire to be emailed, while a minority requested a printed questionnaire. Of all the copies of the questionnaire returned, 20 responses were completed in print form by the students. These questionnaire responses were captured electronically by the researcher, which formed 22% of the data collected. The rest (78%) were responded to electronically. Most of the postgraduate students study part-time, and they do not attend classes daily. At the time of data collection, the students were busy with their practical studies at schools. As a result, contacting them directly was a problem and would have taken too much time. The two student assistants were of great help. Using an electronic questionnaire was deemed the most appropriate for the study's participants. Furthermore, the use of an electronic questionnaire gave respondents the chance to complete the questionnaire at their own pace. The questions and answers were converted to numbers to the participants' responses to facilitate data input once the survey had been completed (Sekaran & Bougie, 2013). Open-ended, and closed-ended questions were asked.

3.9.2.1 Data analysis

The analysis of survey data is usually done by a computer, utilizing several statistical analysis software packages. Descriptive statistics were done for this study, because they are concerned with summarising and describing data (Punch, 2014). Fink (2017) states that easy summaries of the sample and answers to any or all questions are given by descriptive statistics.

SPSS for Windows™ was used to evaluate quantitative data. Social scientists use SPSS, a common quantitative analysis software application. It deals with all the elements of data collection and can be utilised with most statistics. However, it is typically applicable for examining a substantial amount of information. It is being used to produce diagrams and

graphs, including descriptive statistics, namely frequencies, as well as detailed statistical analysis (Crossman, 2018).

The results from the study were displayed in table form, which were provided with summary formats. Descriptive statistics were used in this study as they gave the basic tool for giving a data survey that was summarised and calculating the level of the correlation among samples and variables.

3.9.2.2 Data validity

"Validity is the ability of an instrument to measure what it is designed to measure. Validity is defined as the degree to which the researcher has measured what he has set out to measure" (Smith, 1991 as cited in Kumar, 2014, p.146). Babbie (2016) writes that validity refers to the extent to which an empirical measure adequately shows the actual meaning of the idea that is considered. Establishing validity through logic suggests the reasonable justification of each question in connection "with the objectives of the study, whereas the statistical procedures provide hard evidence by way of calculating the correlations between the questions and the outcome variables" (Kumar, 2014, p.213).

3.9.2.3 Types of validity in quantitative research

3.9.2.3.1 Construct validity

Construct validity demonstrates whether the research instrument that was utilised was acceptable, and whether it measured what it should. It is developed by using a statistical strategy (Kumar, 2014). Construct validity was used for the study. To ensure validity, a statistician assisted the researcher with the construction of the questionnaire.

3.9.2.3.2 Face and content validity

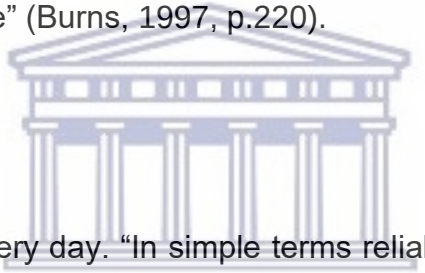
The decision that the tool is being measured is established on the rational relationship between the questions and the study's goals. As a result, one of the most significant

benefits of the face content validity is that it is simple to implement (Kumar, 2014). The creation of this link is a sign of the validity of the instrument. The bigger the link, the more face validity the instrument has. Furthermore, it is essential that components and questions cover all the features of the subject or attitude that is being measured.

The degree to which statements or questions reflect the problem they are supposed to measure, as measured by you as a researcher, your readership, and experts in the field, determines content validity (Kumar, 2014).

3.9.2.3.3 Predictive and concurrent validity

"Predictive validity is judged by the degree to which an instrument can forecast an outcome. Concurrent validity is judged by how well an instrument compares with a second assessment concurrently done" (Burns, 1997, p.220).



3.9.2.4 Data reliability

The word 'reliable' is used every day. "In simple terms reliability of an instrument is the extent to which results derived from the instrument are repeatable or reproducible. In other words, it is a measure of the consistency of an instrument. Reliability of an instrument can be determined and expressed quantitatively" (Nyika, 2018, p.40). For example, if the same respondent was asked of her attitude at two points in time, we would expect the answer to be the same, considering she has not changed her attitude (Treiman, 2009).

According to Hart (1998), standardised questions can be used to determine attitudes by means of different scales. Postgraduate students' attitudes, beliefs, and expectations about electronic tools were measured using a Likert scale. The questionnaire was developed using structures from Davis (1993), Sheikhshoaei and Oloumi (2011), and Tao (2009).

3.10 CONCLUSION

To sum up, this chapter explained the research methodology and the research paradigm, which was used in this study, after a detailed discussion of the research approaches, which is quantitative and qualitative, and their characteristics were mentioned. A mixed methods paradigm was also discussed to show that both research approaches can be used in a single study. The sampling and population were included, to explain how the quantitative sampling was done and how the population had been chosen in this study. The types of sampling were discussed to explain why a specific sampling was chosen for the study. Validity and reliability were explained to ensure that the questionnaire was validated, and to prove that there is consistency in the questionnaire that was used as an instrument to collect data.

CHAPTER 4
PRESENTATION OF RESULTS

4.1 INTRODUCTION

The purpose of the study was to investigate the use of e-resources by postgraduate certificate in education (PGCE) students in the Department of Postgraduate Studies in Education at the Central University of Technology. This chapter presents the outcome and findings gathered through a questionnaire. One hundred and eighteen (118) copies of the questionnaire were distributed and 90 were returned, giving a response rate of 76.3%. The collected data were analysed and classified by using statistical methods.

4.2 ANALYSIS AND SUMMARY OF RESULTS

This section aims to present the results obtained through the questionnaire that was distributed to the postgraduate students.

The first part of the questionnaire focused on the level of study. This question formed part of the study to illustrate the responses of the PGCE students according to their level of study. As seen in Table 4.1, 73 (81.1%) postgraduate students were studying towards a postgraduate diploma, 14 (15.6%) were studying an honours degree, and three (3.3%) were masters' students.

Table 4.1: Level of study of respondents

Respondents	Frequency	Percentage
Postgraduate diploma	73	81,1
Honours	14	15,6
Masters	3	3,3
Total	90	100

N=90

4.2.1 Frequency of use of e-resources

Question 2 of the questionnaire asked how often PGCE students used a particular e-resource. Table 4.2 shows the frequency of use of EBSCOhost, SAePublications, Emerald, OECD iLibrary, ProQuest Central, and Taylor & Francis. The data show that 32 (35.6%) postgraduate students used EBSCOhost at least once a month, followed by 28 (31.1%) respondents that had never used the database. Some of the respondents (24 or 26.7%) used EBSCOhost less than once a month, five (5.6%) used EBSCOHost at least once a week and one (1.1%) used it daily.

Regarding SAePublications, most of the respondents pointed out that they had never used the database. Forty-one (45.6%) respondents indicated that they have never used SAePublications. Those who used it less than once a month were 22 (22.4%) and those using it at least once a month were at twenty 20 (22.2%). A minority of postgraduate students (four or 4.4%) used SAePublications at least once a week and those using it daily were three (3.3%).

Questions on the Emerald database reflected that of the postgraduate students, 44 (48.9%) had never used Emerald. The number of students who used Emerald less than once a month were captured at 19 (21.1%), while those who used it at least once a month were 15 (16.7%). Postgraduate students who were using Emerald at least once a week were eleven 11 (12.2%) and a minority one (1.1%) used the database on a daily basis.

For the OECD iLibrary, the majority (64 or 71.1%) of respondents, indicated that they had never used it. This is followed by those who used it less than once a month: 15 (16.7%). Those using the OECD iLibrary at least once a month were seven (7.8%); at least once a week were (3.3%) and one (1.1 %) daily.

Most respondents (53 or 58.9%) had never used ProQuest Central. Postgraduate students using it less than once a month equalled 22 (24.4 %), followed by those who used it at least once a month (12 or 13.3%) and the minority were those who used it at least once a week (three or 3.3%).

Fifty (55.6%) respondents indicated that they had never used ScienceDirect for any purpose. This was followed by those who used it less than once a month (23 or 25.6%),

while 15 (16.7%) respondents used ScienceDirect at least once a month, 15 (1 6.7%) and the minority of postgraduate students (two or 2.2%) used it at least once a week.

The outcome of the results shows that many respondents had never used Taylor & Francis (34 or 37.8%). This is followed by those who used it less than once a month: (21 or 23.3%), whereas some of the postgraduate students used Taylor & Francis at least once a month (22 or 24.4%). Those who used the database at least once a week numbered nine (10.0%) and a minority of the students indicated that they used it daily: four (4.4%).

Table 4.2: Frequency usage of e-resource

Items	Respondents													
	EBSCOhost		SAePublications		Emerald		OECD iLibrary		ProQuest Central		Science Direct		Taylor & Francis	
	F	%	f	%	f	%	f	%	f	%	f	%	f	%
Never	28	31	41	45.6	44	48.9	64	71.1	53	58.9	50	55.6	34	37.8
Less than once a month	24	26.7	22	24.4	19	21.1	15	16.7	22	24.4	23	25.6	21	23.3
At least once a month	32	35.6	20	22.2	15	16.7	7	7.8	12	13.3	15	16.7	22	24.4
At least once a week	5	5.6	4	4.4	11	12.2	3	3.3	3	3.3	2	2.2	9	10.0
Daily	1	1.1	3	3.3	1	1.1	1	1.1					4	4.4
Total	90	100	90	100	90	100	90	100	90	100	90	100	90	100

N=90

A cross-tabulation of the postgraduate level of study with the database usage paints a more granular picture. Postgraduate diploma students used EBSCOhost the most and the OECD iLibrary the least among the databases. Even then, the most frequent usage

for EBSCOhost was at least once a month twenty-five (25) or thirty four percent (34%). Taylor & Francis comes second to EBSCOhost with 20 (27.4%), using this database less than once per month and 19 (26%) using the database at least once a month. Across the databases, except for EBSCOhost, the most frequent usage is less than once a month. However, most postgraduate students fall into the category of 'never' having used any database (See Table 4.3).

Table 4.3: PGCE Postgraduate Diploma students' usage of databases

	EBSCO-host	SAePub-lications	Emerald	OECD iLibrary	ProQuest Central	Science Direct	Taylor & Francis
Never	23	35	36	53	39	36	25
Less than once month	20	18	14	11	20	21	20
At least once a month	25	15	13	7	11	14	19
At least once a week	5	4	9	2	3	2	8
Daily		1	1				1
Total	73	73	73	73	73	73	73

The honours students used SAePublications and EBSCOhost the most and ProQuest Central and ScienceDirect the least. SA E-Publications was mostly used (at least once a month) by five (5) or thirty-five-point seven percent (35.7%) students and less than once a month by four (4) or twenty-eight-point five percent (28.5%) students. EBSCOhost was mostly used (at least once a month) by six (6) or forty-two-point eight percent (42.8%) or less than once a month by three (3) which is twenty-one-point four percent (21.4%). Daily and weekly usage across all the databases was very low (one or two students). Particularly poorly used were the OECD iLibrary, ProQuest Central, ScienceDirect and

Taylor & Francis where students selected 'never' as their top choice of category. Emerald had a somewhat better ratio of usage to non-usage of 8:6. See Table 4.4.

Table 4.4: Honours students' usage of databases

	EBSCO-host	SAePub-lications	Emerald	OECD iLibrary	ProQuest Central	Science Direct	Taylor & Francis
Never	5	4	6	10	11	11	9
Less than once month	3	4	4	2	2	2	1
At least once a month	6	5	2		1	1	3
At least once a week			2	1			1
Daily		1		1			
Total	14	14	14	14	14	14	14

Taylor & Francis and EBSCOhost were used the most by master's students. Taylor & Francis was actually used every day by these students. However, the same cannot be said for ProQuest Central and ScienceDirect, both of which were never used by master's students. OECD iLibrary was used by two students less than once a month, SAE-Publications daily by one student and Emerald less than once a month by one student (See Table 4.5).

Table 4.5: Master's students' usage of databases

	EBSCO-host	SAePub-lications	Emerald	OECD iLibrary	ProQuest Central	ScienceDirect	Taylor & Francis
Never		2	2	1	3	3	
Less than once a month	1		1	2			
At least once a month	1						
At least once a week	0						
Daily	1	1					3
Total	3	3	3	3	3	3	3

The next section of the questionnaire asked respondents about their searching abilities and ICT competencies. On a Likert scale from strongly agree to strongly disagree, postgraduate students were asked to rate their different abilities. The findings in table 4.6 show that one (1) or one point one (1.1 %) strongly disagreed to the question whether they could develop a search strategy, followed by twenty-two (22) or twenty-four-point four percent (24.4 %) who disagreed with the question that they could develop a search strategy; 15 (16.7%) of the respondents chose to remain neutral to the question. The outcome of the results showed that many respondents either agreed (44 or 48.9%) or strongly agreed (8 or 8.9%) that they could develop a search strategy.

The PGCE students were asked if they could identify keywords and search terms. Most of the respondents agreed that they could identify keywords and search terms forty-seven (47) or fifty-two-point two percent (52.2%) and fourteen (14) (15.6%) of the respondents agreed strongly. There were 20 (22.2%) respondents who disagreed, and the least number of respondents nine (10%) chose the neutral option.

Most of the respondents 44 (48.9%) and 18 (22.0 %) respectively, agreed or strongly agreed that they have the required computer skills. Only one (1.1%) respondent strongly disagreed and five (5.6%) disagreed to having skills to use computers effectively. Twenty-two (24.4 %) chose the neutral option.

Regarding the question on the ability of the respondents to use the internet, only one (1.1 %) disagreed with the question. Nineteen (21.1 %) chose the neutral option, with the majority either agreeing (40 or 44.4 %) or strongly agreeing (30 or 33.3 %) to their internet use skills.

Concerning the question on the respondents' knowledge of database structures, a minority of respondents either strongly disagreed (two or 2.2 %) or disagreed (24 or 26.7%). Twenty (22.2%) respondents chose the neutral option, while most of the respondents agreed with the question (38) or 42.2 %) or strongly agreed (six or 6.7 %) that they are skilled in the knowledge of database structures.

On the strength of their skills to use electronic tools, such as the OPAC, Worldcat and Discovery, 12 (13.3%) strongly disagreed and the majority (37 or 41.1%) disagreed. Twenty-three (25.6%) respondents chose the neutral option, 17 (18.9 %) agreed and one (1.1%) strongly agreed that they are skilled in the use of the OPAC, Worldcat and Discovery.

On the item, 'I can limit my search results or refine a search to obtain the best results', the majority (42 or 46.7 %) either agreed or strongly agreed (nine or 10.0%) that they could refine their search to obtain the best results. Some of the postgraduate students chose the neutral option which indicated that 16 (17.8 %) respondents were less inclined to respond to the question. There were fewer respondents who either strongly disagreed (one or 1.1%) or disagreed (22 or 24.4%).

Table 4.6: Search abilities and ICT competencies

	I can develop a search strategy		I can identify keywords and search terms		I am skilled in the use of computers		I am skilled in using the internet		I am skilled in the knowledge of database structures		I am skilled in the use of electronic tools, such as OPAC, Worldcat Discovery		I can limit my search results or refine a search to obtain best results	
	f	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**
Strongly disagree	1	1.1			1	1.1			2	2.2	12	13.3	1	1.1
Disagree	22	22.4	20	22.2	5	5.6	1	1.1	24	26.7	37	41.1	22	24.4
Neutral	15	16.7	9	10.0	22	24.4	19	21.1	20	22.2	23	25.6	16	17.8
Agree	44	48.9	47	52.2	44	48.9	40	44.4	38	42.2	17	18.9	42	46.7
Strongly agree	8	8.9	14	15.6	18	20.0	30	33.3	6	6.7	1	1.1	9	10.0
Total	90	100	90	100	90	100	90	100	90	100	90	100	90	100

N=90

In the next questionnaire question, respondents were asked to choose which resources they preferred the most. Twenty (22.2%) responded that they preferred print resources, and 30 (33.3%) preferred using e-resources, but most 40 (44.4%) indicated that they preferred using both print and e-resources (See Table 4.7).

Table 4.7: Which resources do you prefer most?

Resources	Frequency	Percentage
Print resources	20	22.2
Electronic resources	30	33.3
Both print and electronic resources Equally	40	44.4
Total	90	100

In an open-ended question, respondents were asked why they chose the options in Table 4.7.

4.2.2 Preference for print resources

There were 20 (22.2%) respondents who chose print sources only. Most who preferred print claimed that they liked reading on paper and making notes and that they found it easier to use. Some responded that e-resources are sometimes not reader-friendly, whereas print is easier to use. Others responded that they found using print resources as opposed to e-resources more convenient, as they do not have to deal with connectivity challenges. Some preferred print, because they did not have access to e-resources, and they did not know how to use them. A few claimed that they concentrated better when they read print. Some used print because they did not know how to search databases. Others used print because e-resources drained their eyes when reading for a long time. Load shedding was another issue that caused them to -prefer print.

These are some of the quotes from the respondents:

- “I prefer using print resources more than e-resources, because I find it easier to use, quicker to flip through and browse through print resources.”
- “I find it easier to use print resources as opposed to e-resources, with e-resources it gives me issues when I have connection issues.”

4.2.3 Preference for e-resources

They were 30 (33.3%) respondents who preferred e-resources. The majority said that e-resources are easy to find when you are searching; they are user friendly once you understand how to use them; they are easy to access, easy to use and obtain recent information; they are very useful, fast-efficient, and environmentally friendly; they save time, because they can be carried everywhere without any limits. Conversely, printed sources may become difficult to carry along all the time. Sometimes during their research, they accessed most information electronically and could not find it in print.

Regarding the e-resources these are some of the verbatim responses:

- “They are easy to use, and I get recent information.”
- “E-resources are user friendly.”

4.2.4 Preference for both print and e-resources equally

Forty (44.4%) postgraduate students preferred both print and e-resources to the same extent. They used print if the Wi-Fi was not available, while others stated that they used both, because they were expected to use printed books and online journals. Sometimes the information they looked for was in print, while others responded that both are relevant. Some responded that they could study e-texts only as it was easier to read hard copy, while others wanted to compare information. At times the internet sources did not give relevant information like in the books and sometimes the information in books was inadequate. Some students revealed that their devices were slow, and then they would rather use print, or sometimes they had difficulty searching the databases and used printed sources.

Here are some quotes from respondents:

- “I get more information with using both types of resources.”
- “Can’t study on electronic only sometimes is better to read hard copy.”

- "I want to compare answers. Sometimes internet does not give you relevant information like in the books and sometimes in the books some information is not enough".

4.2.5 Respondents' familiarity with e-resources

In Question 8 of the questionnaire, respondents were asked how they came to know about e-resources. They could select as many choices as possible from among library training, self-study, peers/friends, and lecturers. Table 4.8 displays that university library training was predominantly chosen as the avenue for familiarising themselves with accessing e-resources. The second highest avenue of finding out about e-resources was through self-study. It appears from the choices that lecturers were the poorest route for discovering e-resources.

Table 4.8: How did you come to know about these e-resources?

	Respondents' choices									
	How did you come to know about databases?		**How did you come to know about e-books?**		**How did you come to know about e-journals?**		**How did you come to know about e-theses?**		**How come did you know about data sites like Techwiz and Worldshare?**	
	f	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**
Training from the university library	69	76.7	59	65.6	45	50	54	60	45	50
Friends/peers	9	10	7	7.8	12	13.3	8	8.9	17	18.9
Self-Study	7	7.8	14	15.6	20	22.2	21	23.3	18	20.0

Lecturers	5	5.5	10	11	13	14.4	7	7.8	10	11.1
Total	90	100	90	100	90	100	90	100	90	100

Question 9 was an open-ended question, where students had to indicate if they did not know about e-resources apart from the choices that were given in Table 4.8. There were only five responses. They were as follows:

- "At Unisa they introduced e-resource since I was a long-distance learning student".
- "I have no idea what is techwiz".
- "I learned about internet when I first came to university".
- "I only learned about e-resources on my first year when I was doing PIM".
- "Library guide has tutorials".

4.2.6 Accessing e-resources

Question 7 on the questionnaire asked respondents where they accessed e-resources. Respondents could choose more than one site where they accessed e-resources. Table 4.9 shows that 57 (63.3%) accessed e-resources via library computers, 52 (57.57%) accessed e-resources from home/residences, 48 (53.3%) accessed e-resources from university computer labs, and lastly three (3.3%) indicated that they accessed e-resources at an internet café.

Table 4.9: Where do you access e-resources?

Items	**Responses**	
	F	**%**
The library computers	57	63,3
Home/Residence	52	57,7
University computer labs	48	53.3
Internet café	3	3.3

Question 11 posed the question to respondents about the purposes for which they used e-resources. Fifty-six (62.2%) indicated that they used e-resources to undertake research projects or assignments. A total of 41 (45.5 %) respondents claimed that they used e-resources to perform a new task, with 22 (24.4 %) using e-resources to write a thesis or dissertation, and nine (10%) using e-resources to publish in a scholarly journal (See Table 4.10).

Table 4.10: Purpose for using e-resources

	Responses	
	N	**Percent**
To undertake a research project or assignment	56	62,2 %
To perform a new task	45	50 %
To write a thesis or dissertation	22	24.1 %
To publish in a scholarly journal	9	10%

Question 12 was a follow-up question where students could say if there was another purpose for using e-resources, rather than the options given in Table 4.10. There were four responses:

- "When I do my assignments".
- "At work".
- "It has specific information that can be useful in my assignments that can't always find online".
- "Use books and online journal I get it from google".

Table 4.11: Reasons for not using e-resources

	Responses	
	N	**Percent**
Do not know how to search for e-resources	47	52,2 %
Do not know how to access e-resources off-campus	46	51,1 %
Not aware of e-resources	25	27,7 %
No time to search during library hours	16	17.7%
Do not require the use of e-resources	14	15.5%
No access to computer	11	12,2 %

Question 14 was an open-ended question with eight (12.5%) responses. Students were asked reasons for not using e-resources if they had different reasons than those given in Table 8. This is how they responded:

- “When I don’t have assignments”.
- “No access to internet”.
- “Limited knowledge on how to access some of the resources. At times that process is cumbersome, and the cost of data is high”.
- “I prefer print resources”.
- “I use it as and when required”.
- “I didn’t know that the library has some of these databases and resources”.
- “No access to internet”.
- “Well, because I am nearly at the library”.

4.2.7 The importance of using e-resources

Question 15 asked respondents about the usefulness of e-resources in relation to the success of their studies. With reference to the students’ access to a wider range of information, only one (1) or one point one percent (1.1%) responded that e-resources were not useful, followed by eighteen (18) or twenty-point zero percent (20.0 %) respondents who were unsure how useful e-resources were to their studies. The majority responded positively with 44 (48.9%) selecting ‘useful’ and 27 (30.0%) selecting ‘very useful’ that e-resources provided access to a wider range of information (See Table 4.9).

The question about the usefulness of e-resources in relation to providing access to current and up-to-date information, showed that 20 (22.2%) respondents indicated that they were not sure, 45 (50%) responded that e-resources were useful, followed by 25 (27.8%) who indicated that e-resources were very useful in accessing current and up-to-date information. No respondent chose ‘not useful’.

In terms of e-resources providing fast access to information, two (2.2%) responded that e-resources are not useful, while 17 (18.9%) indicated that they were not sure. The

majority (47 or 52.2%) chose ‘useful’; 24 (26.7%) chose ‘very useful’, indicating that fast access to information provided by e-resources contributed to the success of their studies.

Table 4.12: Usefulness of e-resources to the success of your studies

	Access to the wider range of information		Access to current up to date information		Fast access to information	
	f	**%**	**f**	**%**	**f**	**%**
Not useful	1	1.1			2	2.2
Not sure	18	20.0	20	22.2	17	18.9
Useful	44	48.9	45	50.0	47	52.2
Very useful	27	30.0	25	27.8	24	26.7
Total	90	100	90	100	90	100

Question 16 asked how often respondents experienced challenges when using e-resources. Responses are displayed in Table 4.13.

Six (6.7%) respondents never encountered slow internet connectivity as a challenge. Seventy-two (80.0%) respondents indicated that they sometimes encountered slow connections, while 12 (13.3%) respondents always encountered slow internet connections when using e-resources.

In terms of limitations when using e-resources off-campus, 18 (20.0%) indicated that they never encountered challenges. The majority, (50 or 55.6%), indicated that they sometimes encountered challenges when using e-resources off-campus, and 20 (24.4 %) indicated that they always encountered challenges when using e-resources off-campus.

Password requirements to use e-resources were also a challenge. Thirty-seven (41.1%) indicated that they never encountered challenges about password requirements. Twenty (22.2%) respondents indicated that they sometimes encountered challenges and 33 (36.7%) respondents indicated that they always encountered challenges when using e-resources, due to password requirements.

Choice of database as a challenge to use e-resources accounted for 50 (55.5%) respondents indicating sometimes, and 19 (21.1%) indicated that they always

encountered challenges. Twenty-one (23.3%) indicated that they never encountered challenges regarding indecision about databases.

Respondents were asked how often they encountered challenges when using e-resources because of a lack of data for searching sources at home. Eight (8.9%) indicated they never had data challenges, while 58 (64.4%) indicated that they sometimes experienced a lack of data when using e-resources at home. Twenty-four (26.7%) indicated that they always encountered challenges when using e-resources at home.

Table 4.13: Challenges students encounter when using e-resources

	Slow internet connection		Limited off-campus connection		Password requirements		Not sure which database to choose from		No data searching from home	
	f	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**
Never	6	6.7	18	20.0	37	41.1	21	23.3	8	8.9
Sometimes	72	80.0	50	55.6	20	22.2	50	55.6	58	64.4
Always	12	13.3	22	24.4	33	36.7	19	21.1	24	26.7
Total	90	100	90	100	90	100	90	100	90	100

4.3 CONCLUSION

This chapter focused on presenting the responses collected from the questionnaire. The findings were presented in the form of tables. The results showed that most of the postgraduate students did not use SA e-publications, Emerald, OECD iLibrary, ProQuest central, ScienceDirect and Taylor & Francis. The postgraduate students agreed that if they could develop a search strategy, they were able to identify keywords and search terms, and they were skilled in the use of computers. However, most of them were not able to use OPAC, Worldcat, and Discovery. The results showed that most of the postgraduate students preferred both print and e-resources and they knew about databases through training from the University library. The challenges they faced when

searching for e-resources were slow internet, using e-resources off campus and the lack of data to use e-resources from home. Thirty-three respondents indicated that they always had problems with passwords, while 20 sometimes encountered difficulties. However, many respondents sometimes did not know which database to select.

CHAPTER 5
DISCUSSION OF THE FINDINGS

5.1 INTRODUCTION

This chapter discusses the findings from the questionnaire that was distributed to the postgraduate students. The research questions of this study were:

- To what extent are PG Education students aware of the different types of e-resources in the CUT library?
- Which e-resources do PG Education students at CUT use?
- How frequently do PG students use e-resources?
- What ICT competencies do these PG Education students need to use e-resources effectively?
- For what purposes do PG Education students at CUT use e-resources?
- What challenges are encountered by PG Education students at CUT when using e-resources?

The theory that was chosen for the study was the Technology Acceptance Theory (TAM). The TAM guided the study as the researcher investigated the postgraduates' attitudes towards the usage of e-resources, that is, their perceived usefulness and ease of use of information technology in their academic work. The theory helped in determining the external variables that impacted these attitudes.

5.2 PG EDUCATION STUDENTS' AWARENESS OF DIFFERENT TYPES OF E-RESOURCES

The study shows that most of the postgraduate students knew about e-resources because of training from the university library. This concurs with the study that was done by Ali (2005) that showed that 95% of users' awareness of e-resources comes from the library. The current study shows that the minority learned about e-resources through

lecturers, friends/peers, and self-study. According to Mishra et al. (2014), knowledge about e-journals should not only be the library's responsibility, but departments should also raise awareness to accomplish students' information needs.

Perceived usefulness was measured by asking students if they knew about e-resources and in this study the majority were cognizant of these sources.

5.2.1 Which e-resources do postgraduate education students at CUT use and how often do they use them?

One objective of the study was to determine the frequency of use of the e-resources by postgraduate Education students at CUT. As the problem statement of this research stipulated that the CUT library invested money in buying e-resources and a computer system that would support and give access to e-resources, it is important to determine to what degree postgraduates use e-resources.

The results indicate that the usage of e-resources by postgraduate students is poor, despite them being aware of those resources. These results are similar to the research done by Bashorun et al. (2011), and Harle (2009), which found that, even though e-resources are accessible in academic libraries, the usage by patrons is very low. Most postgraduate students in the current study chose 'never' when asked about the usage of e-resources, such as SAePublications, Emerald, OECD iLibrary, ProQuest Central, ScienceDirect and Taylor & Francis. EBSCOhost was the only database which more students used (62 or 69%) than those who never used it (28 or 31%). However, when examining diploma, honours and master's students separately, a slightly different picture arises. For example, all three master's students used Taylor & Francis on a daily basis, unlike the majority of postgraduate students. The most-used database by honours students is SAePublications.

This could mean that postgraduate students preferred information from Google and other e-databases more frequently than the databases in the library. Similar findings in the study by Ankrah and Atuase (2018) found that students regarded online academic search

engines, such as Google and CiteSeerx as more accessible than the university-subscribed databases, like ScienceDirect or Emerald.

The lack of usage of e-resources by postgraduate students influenced the TAM's Perceived Ease of Use (PEOU), which is explained as how much postgraduate students believe that they can use e-resources easily. Even though e-resources are accessible in academic libraries, the usage is very poor. In this study, the perceived usefulness of e-resources did not show the relationship with actual usage of e-resources. Because usefulness is seen to be a significant option in different kinds of library e-resources, it is fair to say that how students perceive e-resources will increase the usage of e-resources. But in this present research study, results indicated that postgraduate students find e-resources useful, although the usage of e-resources is low. Davis (1989) stated that perceived usefulness can be described as the extent to which an individual trusts that utilising a specific system would boost work performance. The ignorance of postgraduate students regarding searching for e-resources affects their perceived ease of use. The majority of PG students stated that the e-resources could be useful, but they may not have used them because they perceived them as difficult. They did not find it easy to locate e-resources and experienced difficulty navigating the OPAC, thus these challenges might influence their attitude and intention to use the e-resources.

5.2.2 Required ICT competencies PG students need to use e-resources effectively

Most of the postgraduate students agreed/strongly agreed that they had searching abilities. This result does not concur with the studies done by Adeleke and Nwalo (2017), Ankrah and Atuase (2018), Barfi et al. (2018), Edem and Egbe (2016), Egberongbe (2011), Idoniboye-Obu (2013), Komolafa-Opadeji (2011), Mirza and Mahmood (2012), Omeluzor et al. (2016), and Radijeng (2007), who found that postgraduates have problems in searching, because of insufficient required computer skills. Although most postgraduate students in the current study had knowledge of computers, most of them had inadequate skills in the use of the computer to search for e-resources on the OPAC.

Many postgraduate students can use the internet, but when using library tools like the OPAC, Worldcat and Discovery, most postgraduates did not know how to use these tools. The library OPAC should be the entry point where students can find information regarding e-resources that are subscribed to. This could mean that the library OPAC is not known as an access point to e-resources among the postgraduates who participated in this study, possibly because the library does not promote these tools enough. This concurs with the study done by Mbasera (2012), who found that the library OPAC and library websites were not used frequently among the study participants.

In the current study many postgraduate students revealed that they had not learned how to operate the application, so the library OPAC and to get information via the databases was difficult to use. Students did not know how to navigate database infrastructure. The OPAC influences the usage of e-resources and students might not find it easy to search the application, meaning they could not access what they wanted to do. Perceived Usefulness (PU) was measured in terms of the OPAC and the Worldcat Discovery. This study showed that the postgraduates do not know how to navigate the database infrastructure. This will influence the students' PU of e-resources, because they will not consider the functions of the database structures useful to them, as they do not know that using the OPAC and database structures will enable them to access the necessary information to complete their studies. According to Singh and Jindal (2009, p 136), the library website is a tool to serve the user and professionals. It provides up-to-date information on the library collection; online services and it links to the major e-journal databases. PEOU is based on what an individual trusts in utilising a specific system easily (Davis, 1989). Ease of use should not be overlooked as a moderate determinant of IT acceptance, but efforts should be undertaken to improve ease of use, such as training which would enhance the self-efficacy of a system's users (Hadebe, 2010).

5.2.3 Problems PG Education students at CUT encounter when using e-resources

The majority (80%) of postgraduate students stated that they sometimes encountered slow internet connection when using e-resources. This concurs with research done by Adeleke and Nwalo (2017), Bashorun et al. (2011), Bhatt and Rana (2011), Edem and

Egbe (2016), Egberongbe (2011), Hamutumwa (2014), Komolafe-Opadeji (2011), Madhusudhan (2010), Shukla and Mishra (2011), Somers (2015), and Soyizwapi (2005), who found that most of the postgraduates struggled with slow internet connection.

Most postgraduate students who chose ‘always’ (23.3%) or ‘sometimes’ (55.6%), encountered challenges when accessing e-resources off-campus. This concurs with the study done by Somers (2015) in which students had challenges with their off-campus access to e-resources. Password challenges were ‘always’ experienced by (36.7%) students and ‘sometimes’ by (22.2%). This concurs somewhat with studies by Hamutumwa (2014), Idoniboye-Obu (2013), and Soyizwapi (2005) who found that students always had password issues.

The TAM states that external factors may influence the usage of technology. In this research the external challenges were slow internet connections, off-campus access to e-resources, no data for searching at home, and students forgetting passwords. The TAM model’s external variables influence the PU and PEOU; both variables will affect the behavioural intention, which will lead to the actual use of the e-resources. In this research, because of the challenges the postgraduate students faced when accessing e-resources, it affected the PU, as described as the possible user’s chance of making use of some e-resources. This made it difficult to create a way for the postgraduate students and perceived ease of use (PEOU), which was supposed to make it possible for the students to see that the e-resources are easy to use, so that their behaviour can change, and they can use e-resources effectively and easily.

5.2.4 For what purposes do PG Education students at CUT use-resources?

Results indicated that the majority of postgraduate students used e-resources to undertake research projects, assignments and to perform new tasks. This concurs with Maitato’s (2020) study, which found that the majority of students used e-resources for research projects and assignments. PU was measured by asking the purpose for the use of e-resources to determine if the postgraduate students see e-resources as beneficial for their academic work at the university. Regarding PEOU, the results indicated that

postgraduates do not know how to search for e-resources, and they do not know how to search the library OPAC and OCLC discovery and database infrastructures. The attitude or behavioural intention of postgraduate students might be influenced by these challenges of not being to navigate the library tools. Subsequently postgraduate students' intention to use the e-resources might be negative. This might be why the use of e-resources is poor at CUT.

5.2.5 Benefits of e-resources

Few postgraduate students (22.2%) claimed to use print resources. These results do not concur with Sharma's (2009) study in which most of the postgraduate students chose to utilise e-resources rather than print material. The current study shows that 33.3%) of the postgraduates preferred e-resources, because they are easy to find when you are searching for information, they are easy to use, they save time, and you can use them anywhere without limits, as compared to print. At the same time, an interesting outcome is that the majority (44.4%) of postgraduates preferred both print and e-resources, because these students believed that using both benefits them more than only using e-resources or print resources.

Most postgraduate students in the current study regarded e-resources useful for different tasks. Nine students in Table 4.10 chose *publishing in a journal* and 22 students chose *writing a thesis* as benefits of e-resources, which is an anomaly, as only three master's students participated in the study and would have identified those items as beneficial. A disadvantage of self-reporting on questionnaires is being untruthful. According to Demetriou et al. (2015, p.1), the shortcomings of self-reporting could be respondents giving invalid answers.

Students largely agreed that e-resources are beneficial to their studies, as they can get current and up-to-date information for their studies; they are able to retrieve information quickly and e-resources provide a wider range of information. This corresponds with the studies done by LISBDNETWORK (2016) and Tyagi (2011) who identified that postgraduate students found e-resources useful, as well as with the studies done by

Akpojotor (2017); LISBDNETWORK (2016), and Sharma's (2009) studies, in which postgraduates had the impression that e-resources save time, they are simple to use, and contain valuable and up-to-date information.

Despite disagreement about the usefulness of e-resources for the success of their studies (see Table 4.12), a comparison with Table 4.2 on the frequency of use of databases, shows low overall usage. It might be because of the challenges they face when they try to access the databases, such as not knowing how to search for e-resources and not knowing how to access e-resources off-campus (see Table 4.11 and 4.13).

The PU was measured asking students how e-resources assist them in terms of access to a wider range of information, access to current up-to-date information and fast access to information. Many of the postgraduates perceived e-resources as beneficial and useful. The PEOU, behavioural intention, and actual system use might be a challenge for the postgraduate students, because in Table 4.11 more than half of them indicated that they did not know how to search for e-resources, and they did not know how to access e-resources off-campus. This may affect the postgraduate behaviour regarding the usage of e-resources offered by the library, even though they are aware of the benefits of using e-resources.

The results of this study indicated that the external variables that were measured and guided by the TAM's theory, which were slow internet, forgetting of passwords, and not having data to search from home, show that these challenges might influence postgraduate usage of e-resources, because they might not regard or believe that e-resources are user-friendly. Their attitude may change, and they may look for systems that works better for them.

5.3 CONCLUSION

In this chapter the findings that were presented in Chapter 4 were discussed. The key research questions were used as a point of departure. Important areas that were discussed in the chapter included the e-resources that postgraduate students used, their ICT competencies, the purposes they used e-resources for, the frequency, the problems

they encountered when they were using e-resources and the benefits thereof. The results showed that most of the postgraduate students are aware of the e-resources. However, the postgraduate students need more training on how to search for e-resources, so that they can use them effectively. The TAM theory was linked with the results of the study. An anomaly was shown in the findings. The majority of postgraduate students did not know how to search for e-resources and did not know how to search the catalogue. Most of their training was given by the library, so it is surprising that they still cannot search e-resources via the OPAC, the library tools. The majority of postgraduate diploma students never used most of the databases.

CHAPTER 6
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The aim of this research was to investigate the use of e-resources by postgraduate students in Education at CUT. The CUT library is devoted to giving the CUT community access to cutting-edge information in support of teaching, learning and research, as well as the provision and promotion of access to comprehensive and up-to-date information, tailored for CUT programmes to maintain high student throughput, as indicated in their mission statements. Library users are no longer compelled to go to the library physically during their opening hours to meet all their information needs, as e-resources are made available for use in their own time and space. This chapter gives a summary, conclusion, and some recommendations for future research on this topic.

6.2 SUMMARY OF THE FINDINGS

The findings fulfil the research objectives (and questions), which were to examine the awareness of e-resources among CUT postgraduates in Education, to identify challenges that Education students encounter when accessing e-resources, to find out how e-resources benefit the postgraduate Education students, and to identify the attitude of the Education students towards the use of e-resources. Another objective was to recommend guidelines for the library on the use of e-resources, which will be discussed under the recommendations section. The findings are summarized according to each research objective.

6.2.1 Awareness of e-resources among CUT postgraduates in Education

The findings showed that most of the postgraduate students in Education were aware of the e-resources in the CUT library. Many of the postgraduate students learned about e-

resources through the library while a few learned from their lecturers. This finding was in line with the research done by Somers (2015).

6.2.2 Identifying challenges Education students encounter when accessing e-resources

The study also found that postgraduate students in Education had challenges when accessing e-resources and those challenges could be classified into limitations concerning infrastructure problems, as well as personal limitations. One of the challenges identified concerning poor infrastructure was the slow internet connection. Regarding personal limitations that were indicated, a few respondents included a lack of awareness of e-resources and sometimes the passwords requirements were not clear.

6.2.3 Benefits of e-resources for the postgraduate Education students

The results showed that many of the postgraduate students felt that e-resources give them up-to-date information and fast access to information. E-resources are regarded by the postgraduate students as very beneficial to their studies. However, the results also showed that the use of e-resources at CUT was poor. This was because the postgraduate students lacked the knowledge in how to retrieve e-resources via the OPAC.

6.2.4 Attitude of the Education students towards the use of e-resources

Attitudes towards the use of e-resources might be affected by the challenges that students face when trying to access the e-resources. For instance, if students frequently struggle with password requirements and they perceive the use of databases as difficult, they might give up on the system, and their attitudes towards e-resources may be negative. Furthermore, the lack of skills and knowledge to search for the e-resources and deciding which database to choose, might affect their attitude towards e-resources.

6.3 CONCLUSION

In conclusion, this research established that CUT's library e-resources are not used extensively amongst the postgraduate Education students. In Chapter 4 of the research, a cross tabulation is provided to show that students studying towards their Postgraduate Diploma in Education fall in the category of never having used any databases. This study showed that postgraduate students were aware of e-resources, but they were not using them much. The study further revealed that most respondents did not know how to search and access e-resources, both in the CUT library, as well as off-campus. The study also showed that there were respondents who were not aware of e-resources at all, while a few respondents did not require the use of e-resources, possibly due to not knowing about them or having had insufficient training in their use. It was further demonstrated that postgraduates made use of e-resources for various purposes; including research projects, assignments, to write a thesis, and to publish in scholarly journals.

Finally, it may be concluded that e-resources play a significant part in the retrieval of information. What was clear from this study, is that the usage of e-resources by postgraduate students at CUT is very low. It demonstrated a negative impact on teaching, learning and research work. This study concurs with other studies studied in the literature review that awareness of e-resources does not mean that e-resources are used, as the results indicated. This study should assist librarians to acknowledge the significance of e-resources in the university environment. Training and marketing of e-resources might alter the attitudes and improve usage of postgraduate students. It is important to note that the CUT Library has invested money in procuring e-resources and computer systems that support and provide access to e-resources for students.

Technology is removing the barriers of the traditional library, which suggests that university libraries must find innovative ways to provide access to e-resources to postgraduate students without physically going to the library.

6.3.1 Recommendations

Based on the findings of the present research, the researcher makes the following recommendations for more effective use of e-resources at CUT:

- The library needs to make an effort to train students and create user education programmes that will give information to all students in how to retrieve e-resources off-campus. This is not limited to those who have no time to search during library hours. Those who do not have access to computers can be trained to use their cell phones to access e-resources. Such programmes should be designed to train students how to search and find information efficiently. Although CUT library has a programme called the Personal Information Management Programme (PIM), it only caters for first year students, but it needs to accommodate students at all levels.
- Faculty librarians need to look at different platforms to improve the awareness of e-resources. The library should consider alternative channels to communicate this kind of information, for example CUT has a radio station called CUTFM. The library could use this media platform as a tool to market library resources and training. The faculty librarians could negotiate with the radio station to give the library a time slot when they can showcase the library's e-resources.
- CUT library has a Facebook page to which postgraduate students can log in and follow the library training sessions regarding databases and e-books.
- The faculty librarians need to create an alerting service that will alert the postgraduates of new e-resources that are available in the library.
- CUT has an online publication named Thutong in which everything that concerns CUT is shared. The library could publish their notices on Thutong, regarding e-resources training, and guidelines of how to access e-resources on campus and off-campus.
- The library should conduct customer satisfaction and needs surveys on library services to confirm their impact in realising the university's goals. The results from the surveys should be used to address concerns and to improve current services.
- Provide support to academics and students in the use of e-resources.

- Improve the marketing strategy of services offered by faculty librarians, especially to students. The aim of the marketing strategy is to increase awareness, advocate for and train the CUT community on the use of LIS resources with their vast benefits.
- Build a comprehensive collection of e-resources that meet teaching and learning needs and standards of all faculties.
- Ensure that the faculty librarians are up to date with the current technology and aware of future trends in e-information resources.
- To address the issue of a lack of awareness, continuous training programmes are important for the optimum use of e-resources. This can be seen as an important entry point for librarians to educate lecturers and academic staff on different e-resources.

6.3.2 Recommendations for further research

- Investigate how online orientation of LIS services will benefit postgraduate students.
- Investigate collaborative academic programmes and services with the involvement of the faculty librarians to assist in improving students' learning skills.
- Investigate how the library can train academics and postgraduate students more effectively to access information resources and benefit from LIS services

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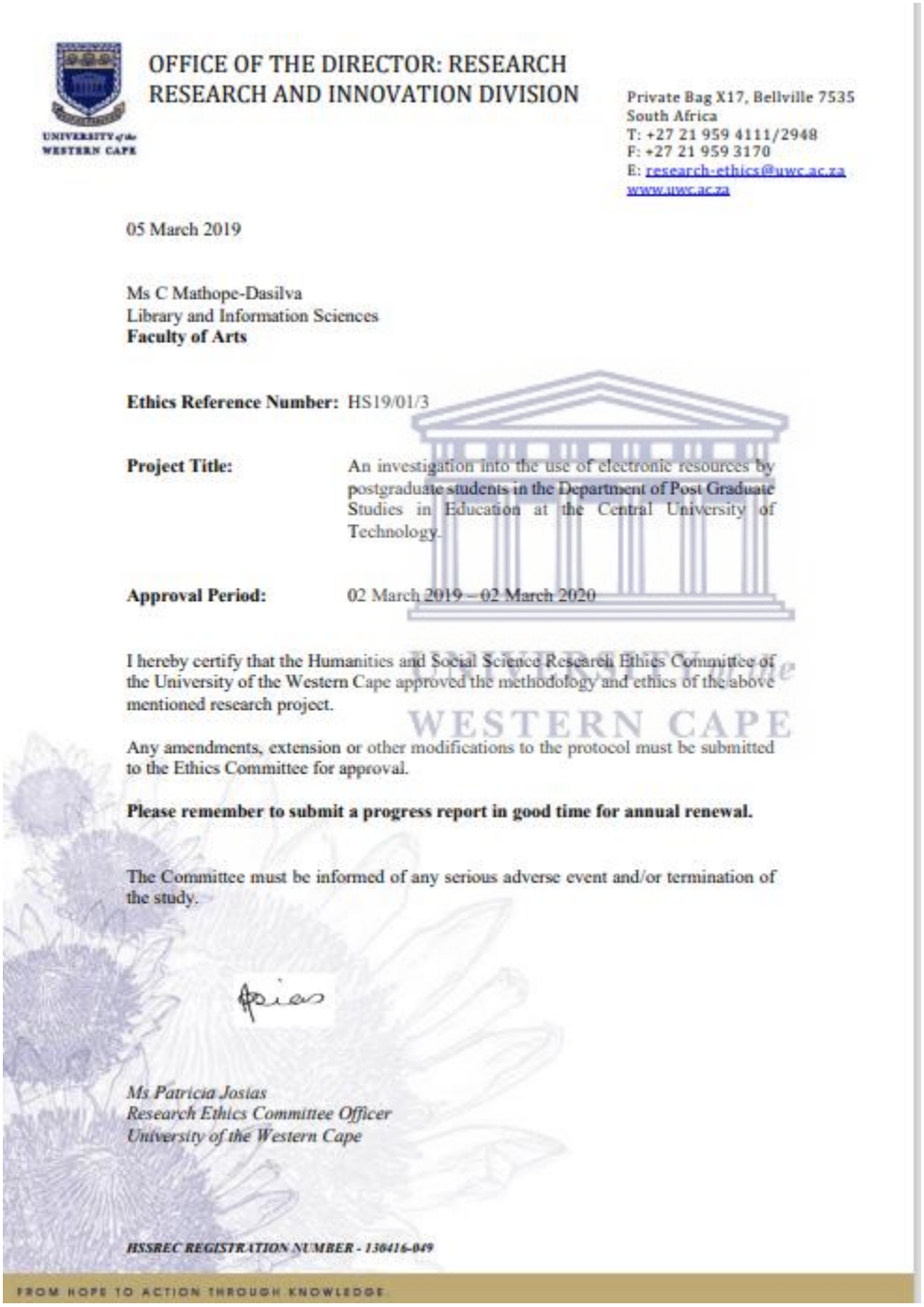
APPENDICES

APPENDIX 1: UWC ETHICAL CLEARANCE LETTER



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05 March 2019

Ms C Mathope-Dasilva
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Ethics Reference Number: HS19/01/3

Project Title: An investigation into the use of electronic resources by postgraduate students in the Department of Post Graduate Studies in Education at the Central University of Technology.

Approval Period: 02 March 2019 – 02 March 2020

I hereby certify that the Humanities and Social Science Research Ethics Committee of the University of the Western Cape approved the methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

Please remember to submit a progress report in good time for annual renewal.

The Committee must be informed of any serious adverse event and/or termination of the study.

Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape

HSSREC REGISTRATION NUMBER - 130416-049

FROM HOPE TO ACTION THROUGH KNOWLEDGE

APPENDIX: 2 CONSENT LETTER TO DO RESEARCH AT CUT

Central University of Technology, Free State

INSTITUTIONAL PLANNING AND QUALITY ENHANCEMENT

MS C MATHOPE-DASILVA

CMathope-Dasilva@cut.ac.za

PERMISSION FOR MS C MATHOPE-DASILVA TO CONDUCT SURVEY AT CUT FOR HER MASTER PROJECT ENTITLED 'AN INVESTIGATION INTO THE USE OF ELECTRONIC RESOURCES BY POSTGRADUATE STUDIES IN EDUCATION AT THE CENTRAL UNIVERSITY OF TECHNOLOGY."

Dear Ms C Mathope-Dasilva

This is to confirm that you have been granted permission to conduct research at The Central University of Technology for your Master project entitled "An Investigation into The Use of Electronic Resources by Postgraduate Studies in Education at The Central University of Technology."

The conditions of the conditional permission are:

- The survey will not interrupt any of the official activities at the CUT;
- You will supply us with the copy of your report;
- The cost of all related activities will be covered by yourself;
- Recruitment of participants is the sole responsibility of yourself;
- Voluntary nature of the potential participant's decision to consent to participate should be strictly observed;
- You should not disclose a potential participant's decision to participate or otherwise to any other party;
- Permission does not compel, in any sense, participation of staff members or students in your survey.

ACTING DIRECTOR: INSTITUTIONAL PLANNING AND QUALITY ENHANCEMENT

Prof. A Szubarga

27 March 2019

APPENDIX 3: CONSENT LETTER FOR POSTGRADUATE TO PARTICIPATE IN THE STUDY

An investigation into the use of electronic resources by postgraduate students in the Department of Post Graduate Certificate in Education at the Central University of Technology

This study aims to recommend guidelines for the library the use of e-resources.This research will investigate the use of e-resources among postgraduate (PG) education students at the CUT. This will be achieved by focusing on the key questions below:

(a) To what degree are PG education students aware of the different types of e-resources in the CUT library?
- Which e-resources do PG education students at CUT use?
-What ICT competencies do these PG education students need to effectively use e-resources?
-For what purposes do PG education students at CUT use e-resources?
-How frequently do the PG education students at CUT use the library's e-resources?

(b) What problems are encountered by PG education students at CUT when using e-resources?
-To what extent are the PG education students at CUT satisfied with the infrastructure to access e-resources?

The researcher's supervisor is Prof. Sandra Zinn, of the University of The Western Cape in the Department of Library and Information Science. To learn more about the current research, the researcher and the supervisor, you can make use of the contact details below:

Researcher Chareen Mathope-Dasilva
Email:9750528@myuwc.ac.za
Cell no: 082 849 9115

Supervisor contact details
Email:szinn@uwc.ac.za
Tel: 021 959 3249

Please note ONLY POSTGRADUATE STUDENTS SHOULD COMPLETE THIS SURVEY.
The names of the participants along with the university name will be kept anonymous on the published thesis and other publications that will be extracted from the thesis. Essentially the current research is mainly for academic purposes aimed at enabling the researcher to obtain her Master's degree, that is, it is not intended for commercial purposes.

Importantly, this research project has received ethical approval from the Humanities & Social Science research ethics committee of the University of the Western Cape, Tel. 021 959 2988, and email: research-

ethics@uwc.ac.za. You may also contact Patricia Josias, research-ethics@uwc.ac.za or telephone:+219594111

- [ ] I understand that my participation is voluntary and that I can withdraw at any time without t..
- [ ] I understand that my responses and personal data will be kept confidential. I give permissi...
- [ ] I agree that the data collected from me may be used in future research (that is, within 5 yea..
- [ ] I agree to take part in the above research project.

APPENDIX 4: RESEARCH INSTRUMENT

QUESTIONNAIRES

SECTION A: PERSONAL INFORMATION

1. **Level of study**

Choose only one

Post graduate diploma	
Honours	
Masters	
PhD	

2. **How often do you use the following E-resources? Please make an X**

on the appropriate box

E-resource	Daily	Weekly	Monthly	Less than less a month	Never
EBSCOHost					
SAePublications					
Emerald					
OECD iLibrary					

Proquest Central					
ScienceDirect					
Taylor and Francis					

SECTION B: INFORMATION SEARCHING AND ICT COMPETENCIES.

3. **Please choose the option that best describes your abilities**

	Strongly agree	Agree	neutral	disagree	Strongly disagree
I can develop a search strategy					
I can identify key words and search terms					
I am skilled in the use of computers					
I am skilled in using the Internet					
I am skilled in the knowledge of database structures					
I am skilled in the use of electronic library tools such as the OPAC, Worldcat, Discovery.					
I can limit my search results or refine a search to obtain the best results					

4. **Which resources do you prefer most? Please choose one**

E-resources	
Print resources	
Both print & e-resources equally	

5. **Please explain your preference**

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.....

SECTION D: FAMILIARITY WITH E-RESOURCES

6. **How did you come to know about these resources? Please tick the appropriate choice**

	Resources	**Training from the University Library**	**Self-study**	**Friends/ peers**	**Lecturers**
I	Databases				
II	e-books				

III	Online journals				
IV	Online theses				
V	Data sites, Techwiz and worldshare				
Other please specify					

7. Where do you access e-resources? You may choose more than one.

I	University computer labs	
II	Home/Residence	
III	Internet café	
IV	The library computers	
Other, please specify		

8. For what purposes do you use e-resources? You may select more than one.

I	To publish in a scholarly journal		

II	To undertake a research project or assignment		
III	To write a thesis or dissertation		
IV	To perform a new task		
Other, specify			

9. Please tick reasons for not using e-resources? You may select more than one.

Reasons	
No access to computer	
Do not require use of e-resources	
No time to search during library hours	
Not aware of e-resources	
Do not know how to search for e-resources	
Do not know how to access e-resources off-campus	

SECTION E: THE IMPORTANCE OF USING ELECTRONIC RESOURCES

10. How useful are e-resources to the success of your studies? Please indicate your choice.

I		Very useful	Useful	Not sure	Not useful	Absolutely not useful

I	Access to wider range of information					
II	Access to current up to date information					
III	Fast access to information					

11. How often do you encounter the following challenges when using e-resources?

Reasons	Always	Never	Sometimes
Slow internet connection			
Limited off-campus connection			
Password requirements			
Not sure which database to choose			
No data for searching at home			

SECTION F: SUGGESTIONS AND RECOMMENDATIONS ON EFFECTIVE ELECRONIC RESOURCE ACCESS AND UTILIZATION.

12. Please make any suggestions or recommendations to improve e-resources access and use at CUT.

THANKS FOR YOUR COOPERATION