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ICT LITERACY SKILLS AND DEMOGRAPHIC FACTORS AS DETERMINANTS OF ELECTRONIC RESOURCES USE AMONG THE UNDERGRADUATE STUDENTS IN THE SELECTED UNIVERSITIES THE EASTERN CAPE, SOUTH AFRICA

A Thesis submitted in fulfillment of the Requirements for the Doctor of Philosophy (PhD) in Library and Information Science, in the Faculty of Social Science and Humanities, University of Fort Hare.

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DECLARATION

I, **OLATOYE, Oluwayemi IbukunOluwa (Mrs.)** hereby declare that the content of this thesis is my original work and has not been previously submitted to any other university for any other degree in the social sciences or in its entirety. All published and unpublished materials I consulted in the course of writing this thesis are duly acknowledged.

Signature: -----------------------------------

Date: **08 February 2019**

DEDICATION

I dedicate this thesis to God Almighty, my Maker and Lord. I also dedicate this thesis to my late father, Mr Samuel Sunday Adesegun Odularu, who served as the former Acting Librarian, University of Ibadan, Ibadan, Nigeria, and transited to glory on July 23, 2016. I thank you for your love and care. Continue to rest in perfect peace. I also dedicate this thesis to my mother, Mrs. Alice Taiwo Odularu, for her endless love.

I sincerely dedicate this thesis to my husband, Tolulope and children (Jemimah and Jeremiah), for their continued support and understanding. You are greatly loved and appreciated.

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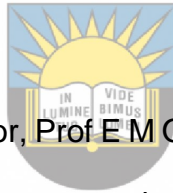
I am deeply grateful to my supervisor, Prof E M Ondari-Okemwa that intervened regarding my coming, admission and acceptance at the Department of Library and Information Science, University of Fort Hare for the pursuance of this degree. In addition, I greatly appreciate my second supervisor, Prof Fhulu Nekhwevha, for the advice, mentorship support and focus he provided during the course of this programme. I also appreciate my third supervisor, Dr Ndakasharwa Muchaonyerwa, for her advice and motivation, as well as the valuable correction you made to my thesis. This degree would have been an impossibility for me without my supervisors. I thank all the three supervisors for the encouragement and cordial relationship, which I enjoyed because of working with them. Many thanks to them for allowing me grow as a researcher.

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ACRONYMS AND ABBREVIATIONS

ACRL………………………………………..Association of College Research Librarians

AJOR…………………………….…………..American Journal of Operations Research

AJOL……………………………………….African Journal Online

AGORA…………………………….………Access to Global Online Research in Agriculture

ANOVA……………………………………….Analysis of Variance

BI………………………………………..…...Behavioural Intention

CBET……………………………………...Competency-Based Education and Training

CD……………………………………….Compact Disc

CD-R…………………………………………Compact Disc Recordable

CD-RW…………………………………….Compact Disc ReWritable

CD-ROM………………………………………Compact Disc Read-Only Memory

CT……………………………………………...Computer Technology

DICTS…………………………………….…..Directorate of ICT Support

DOAJ…………………………………..………Directory of Open Access Journals

DOI…………………………………………Diffusion of Innovation Theory

DVD……………………………………………..Digital Versatile Disc

EBSCOhost…………………………………… Elton B. Stephens Company Host Databases

EIR……………………………………………Electronic Information Resources

E-JOURNALS………………………………..Electronic Journals

EIS……………………………………………Electronic Information Sources

ERIC…………………………………………Education Resources Information Centre

ETDs………………………………………..Electronic Thesis and Dissertations

EIF……………………………………………Electronic Information Floor

HEIs…………………………………………...Higher Education Institutions

HINARI……………………………………....Health Inter-Network Access to Research Initiative

HTML………………………………………… Hyper-Text Markup Language

ICT………………….....................................Information Communications Technology

IDT……………………………………………Innovation Diffusion Theory

INTERNET…………………………………Inter-connected Network

IS……………………………………………...Information Systems

IT…………………………………………….Information Technology

JSTOR………………………………………..Journal Storage

LAN…………………………………………..Local Area Network

LanTEEAL…………………………………………Local Area Network of the Essential

Electronic Agricultural Library

NPC…………………………………………………National Population Commission

NUL………………………………………………National University of Lesotho

OARE………………………………………………… Online Access to Research in the Environment

OPAC………………………………………………Online Public Access Catalogue

PEOU……………………………………………Perceived Ease of Use

PhD………………………………………………Doctor of Philosophy

PMC………………………………………………PubMed Central Journal

RAM………………………………………………Random Access Memory

RU………………………………………….....Rhodes University

SAGE…………………………………………SAGE Journal Publications

SN……………………………………………Subjective Norm

SPSS……………………………………………..Statistical Package of the Social Sciences

TAM…………………………………………Technology Acceptance Model

TEEAL………………………………………………The Essential Electronic Agricultural Library

TPB…………………………………………..Theory of Planned Behavior
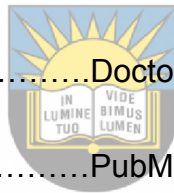
UEAB…………………………………………University of East Africa Baraton

UFH…………………………………….…University of Fort Hare

UNESCO…………………………….……United Nations Educational, Scientific and

Cultural Organization

URL………………………………………….. Uniform Resource Locator

USA……………………………………….. United States of America

VCD…………………………………………..Video Compact Disc

WAN………………………………………….Wide Area Network

WHO…………………………………………World Health Organization

Wi-Fi…………………………………………Wireless Fidelity

WWW………………………………………World Wide Web

ABSTRACT

In today's world, information is the foundation on which every strata in society is built and established. As we are in the jet age, the use of Information Communications Technology (ICT) is sine-qua-non to academic development. It is equally important to acquire skills and build capacity in ICT applications, as well as reflect on the demographic factors that determine the utilization of electronic resources among the undergraduate respondents. ICT has also evolutionalized professionalism in librarianship by providing delivery of appropriate, suitable and value-added information services in digital format. This research, therefore, investigated undergraduate students' ICT literacy skills and demographic factors as determinants of electronic resources use, with selected tertiary institutions of learning in Eastern Cape South Africa as a case study.

The study was premised on the Diffusion of Innovation Theory (DOI), Technology Acceptance Model (TAM) and the Theory of Reasoned Action (TRA) with the aim of appraising undergraduate students' ICT literacy skills and demographic factors as causative elements of e-resources utilization in designated Eastern Cape universities in South Africa, as well as to unravel the impact of the theories on the adoption of technology and the perceived utilization of the electronic resources. The application of DOI, TAM and TRA theories for this study exemplifies the acceptance and usage of technological innovations by envisioned users in ICT literacy skill and electronic resources research, and these theories formed the theoretical basis to strengthen the study. The specific

objectives of the study are: To ascertain how undergraduate students in selected Higher Education Institutions (HEIs) in the Eastern Cape access e-resources; to determine the level of influence of ICT literacy skills on the use of electronic resources by Undergraduate students in the selected universities; to determine the regularity levels of use and problems encountered in the use of electronic resources by Undergraduate students in the selected universities; to ascertain the contributions of demographic factors on the use of electronic resources by Undergraduate students in the selected universities; and to determine the attitudes and perceptions of undergraduate students towards the use of e-resources.

The approach of the study was in threefold; one, general discussion regarding ICT literacy skills of the respondents and secondly the demographic factors that determine electronic resources use of undergraduate students in the University of Fort Hare and Rhodes University. Finally, ICT literacy skills and demographic factors were investigated with the applicability of TAM, DOI and TRA theories Specifically, under these theories (TAM, TRA and DOI), TAM and TRA models were used to explain behavioural intention and to envisage user acceptance of technology usage (electronic resources), and to elucidate the correlation between the respondent's (undergraduate students) perceptions, attitudes, beliefs and ultimately system utilization. DOI was conceptualized in this study as a valued tool for appraising the effect of demographic factors on the utilization of electronic resources among the undergraduate students in their academic pursuit. The major findings of the study specifies that ICT literacy skills and demographic factors determine the use of electronic resources. Hence, it is reasoned in the thesis that ICT

literacy and demographic factors affects the frequency of electronic resources with those, for instance, who have obtained high ICT literacy skill levels when compared to others who are yet to develop their ICT literacy skills. Further, it has been disclosed elsewhere in the study that in terms of age, the younger undergraduate students (from 21 to 30 years) utilize electronic resources more regularly than their older colleagues (those who are 30 years of age and above).The study was approached with the adoption of the mixed-method research technique. The administration of a total of 377 copies of the questionnaire to undergraduate respondents in the aforementioned HEIs, (out of which 266 copies were returned), was conducted with in-depth interview conversations comprising of ten participants, with six respondents selected in the University of Fort Hare and four respondents from Rhodes University. Data acquired from the study were processed and analyzed with the aid of Statistical Package for Social Science (SPSS) for the quantitative data. In the light of the theoretical frameworks of the study, research results established that the ICT experience of the undergraduate respondents greatly influences their proficiency levels. This hypothesized assertion was subjected to statistical validity test through regression analysis. The result depicts that the p-value is 0.49 (which means that $p \leq 0.05$), and interprets to mean that the hypothesis is accepted. Also, the findings of this study depicts that the utilization of electronic resources by the respondents is mostly for entertainment purposes (such as viewing online videos, listening to sport commentaries, music and video downloads, e-mail communications, chatting with other people) had the highest rankings from the component matrix analysis which were greater than 0.5. From the forgoing, this is interpreted to mean that the respondents possess excellent proficiency in ICT literacy skills as well as in the use of Microsoft packages.

Also, in the course of the in-depth research interview, it was discovered that most of the interviewees have excellent proficiency in ICT literacy skills.

Generally, gender is an essential element that determines accessibility and e-resource utilization of respondents to electronic resources through the home and from other sources. Furthermore, it was discovered that that language is not a determinant regarding respondents' accessibility and e-resource utilization from other sources of access to respondents. The analysis of this study revealed that more males, who are within the active e-resource using age bracket of 21 to 30 years old access and utilize electronic resources through the residences than their female counterparts. This age bracket is followed in terms of access and use of e-resources through residences by the respondents that are 20 years and below. A chi-square test of independence was also performed to survey the level of correlation between age and access to E-resources. A small p-value (typically ≤ 0.05) indicates strong evidence against the null hypothesis, so you reject the null hypothesis. A large p-value (> 0.05) shows weak evidence against the null hypothesis, so you reject the null hypothesis i.e. X^2(3, N=53) = 7.82. The Pearson chi-square (p-value) generated was .294, which is construed to mean that it is insignificant. Therefore, the explanation is that age has no influence on access of respondents to electronic resources through cybercafé. In order to make ICT literacy skills more beneficial to the undergraduate students in the selected HEIs, recommendations were made in this study. Firstly, there is a need for mass enlightenment campaigns on the use and benefits of E-resources among undergraduate respondents, the building of capacity of the undergraduate students in the use of electronic resources ICT literacy skill development programmes, need for intervention programmes focusing on the application

of some E-resources and software where the students are ranked low. Further, it is recommended that female students need to be encouraged to use E-resources. Also, delivery and empowering of Wi-Fi services, as well as the provision of CD- ROM databases should be considered.

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CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

Information Communications Technology (ICT) literacy has become sine-qua-non in all developmental strata of human endeavor, education inclusive. From the foregoing, capacity development in ICT literacy cannot be over-emphasized among the academia. On the contrary, it was discovered in this study that some Eastern Cape universities are under-utilizing electronic resources on account of their low level of ICT literacy skills and some demographic factors. It is on this premise that this study sought to unravel the reasons for this anomaly, as well as proffer solutions in this regard. Therefore, this study investigated Information Communications Technology (ICT) literacy skills and demographic factors which affects the application of digital information resources among undergraduate respondents Universities of Fort Hare and Rhodes, Eastern Cape, South Africa. On account of the fact that this study is centered on universities, it is important to state that universities are storehouses of structured knowledge, as well as harbingers of storage and information retrieval, and thus provide diverse information resources to the general public. Furthermore, they promote character and sound judgment, thereby developing quality individuals required for nation building. Universities also stock information in diverse formats, including print and electronic information materials. Most

universities today, have transited from manual to digital (computerized) electronic information service delivery systems that give access to their users (Cronin, 1998). Universities are higher education institutions that serve the academic needs of students (at undergraduate and postgraduate levels) in addition to teaching and non-teaching staff. Chandler, (2003) posited that tertiary institutions have a crucial commitment towards meeting academic, social, governmental, psychological, and economic information needs of the society at large.

The research adopted a survey methodological orientation and a theoretical framework which originated from Theory of Reasoned Action (TRA), Diffusion of Innovation (DOI) and Technology Acceptance Model (TAM). As elucidated by Agarwal and Prasad, (1999), TAM is a highly esteemed theory among researchers notably as a result of its far-reaching suitability and applications among scholars of information systems technology. This theory clearly exemplifies the adoption and acceptability of electronic resources by the undergraduate respondents and other users, as well as the empirical research results, and thus, develops the intellectual capacity of the respondents in ICT literacy advancement. Venkatesh, (2003) exemplifies that the impact of TAM on an individual's technology acceptance, utilization or behavior as a dependent variable. TAM is therefore fashioned to clarify behavior, idea or situation in such a way that it would consequentially be able to forecast human behavior, thereby improving its acceptability as regards information system usage as discussed by Mathieson (2001), while DOI theory typifies the procedure that happens as people accept a newness as regards knowledge, product, philosophy, practice, etc. Rogers navigated this process, stressing that in normal situations, a few people initially adopt the new innovation and its utilization. As these initial

adopters diffuse the innovation, more people become aware and tend to embrace it, which leads to the advancement of the innovative idea. Another viewpoint by Straub, (2009) epitomizes adoption as a series of individual events embarked upon over protracted time, which are severally based on perceptive, and considerations regarding the outcome of their emotions. The usability of the TRA model to this research cannot be overstressed, as it is assumed that if a user's perception concerning the application of digital information resources is positive, then the probabilities of them utilizing it would be much more (Fang, 2004). The justification of these theories in this research therefore helps the undergraduate students to be aware, believe, accept and adopt as well as influence their attitudes towards their utilization of e-resources. This study therefore strengthens the core argument of this thesis, that e-resources use by students in HEIs has a great influence on their productivity, based on their ICT literacy skills and some demographic factors, as discussed in chapters 5 and 6.
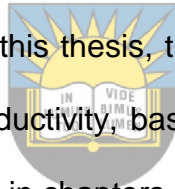
1.2 CORE ARGUMENT OF THE RESEARCHhe existence o ICT inHEI operations has greatly enriched information services delivery and led to better management of electronic information resources, and this has also led to the qualitative and productive development of university services. The nature of this study dictates that electronic information resources use is influenced by ICT literacy skills and demographic factors of the respondents. The electronic information resources are meant to develop service delivery in tertiary institutions, thereby improving accessibility towards the application of digital

information resources. The significance of digital resources in universities could be effectively utilized by students, academics, and administrators, and these will lead to enhanced productivity in the society at large. This thesis argues that e- information use by HEIs students has a positive influence on their productivity. Put differently, despite the provision of qualitativedigital information in HEIs , empirical findings from the study shows that e-resources are under- exploited by most HEI students, hence, leading to counter-productivity. Thus, the inability of undergraduate students to adopt ICT literacy and embrace demographic factors (as revealed from the study) further justifies the clarion call for optimal application of the e-information by the respondents, as epitomized in this study.

In essence, the core argument of this thesis is that the theories adopted in this study (TAM, TRA and DOI) indicate that technology has improved users' perceived ease of use (PEOU) and perceived usefulness (PU) towards information resources. As put forward by Ramayah, 2002), it could be argued that despite the provision of some e- information by the universities, a preponderance of the respondents still under-utilized them, thereby limiting their level of satisfaction and expectations from their institutions, as theorized by the TAM , which postulated that behavioral intention is influenced by the application of IThas been certified to have a high validity empirically. At this point, the key concepts that are crucial to this study are hereby discussed below.

1.3 INFORMATION

Information is the foundation to the growth of any society. While it enriches decision making, it stimulates growth in librarianship through the organization and design of capacity enhancement Apart from the far-reaching benefits accruable from information service delivery, Thong, (2002) posited that it is essential for researchers, and other stakeholders to develop strategies that will engender proliferation, usage as well as more efficient exploitation of ICT. The users' enhancement of capacity on the effective application of digital resources should be gender balanced. The advent of information management/ technology, takes its history from the Mid-20th century on account of the propagation of print information resources, which is also recognized as the dispensation of information explosion. The aftermath of this development resulted in the creation of digital information materials, for instance CD-ROMs, computers, E- mails, OPAC, etc. which are designed to properly process and store information for accessibility as well as lessen the largeness of print information resources. From the foregoing, it is imperative to state that education is one of the major areas that has radically transformed information management and utilization, due to the fact that it expands capacity development of manpower and research at different levels educational strata including higher educational institutions.

1.3.1 Information & Communication Technology (ICT)

Information & Communication Technology (ICT) is epitomized by Fabunmi, (2012), refers to the system of processing, storing, accessing, transferring, receiving, and transfer of ideas, attitude or e-information via computers as well as other facilities of communication.

ICT literacy skill refers to the capability of effectively and critically navigating, in a bid to create and critically evaluate e- information through the use of an array of digital technology skills. Also, Jenkins, (2009) stated that it necessitates the user to identify and explore the influence to operate, transform and explore digital phenomena, to ensure the pervasive distribution, and to definitely inculcate them to new forms of technological advancement. ICT performs an essential function in the progress and emancipation of any human endeavor. Also, Adedeji, (2010) recommends that it is a harbinger for the actualization of educational, socio-economic, technological and scientific development. ICT has impressively enhanced the HEI sector particularly as regards research, teaching, and learning. Competence in the utilization of ICT infrastructure does not only surpass the industrial, commercial, and corporate sectors, it is also an integral factor in education and self-development at all human vocational levels (Allen, 2011). Cooperative learning is commonly understood to be nurtured and developed through simulation of ICT resources such as telecommunications, computers, the internet among others so as make complex learning procedures easier to manipulate by stakeholders and other users. This is further buttressed in the assertion of Van der Westhuizen (2004) who elucidated that, technology is a harbinger of enhanced accessibility to e-information, improved communication and interaction and as regards ICT utilization for learning, between town and gown (i.e. academics and non-academic professionals). It is on this premise that Gay, (2005) disclosed that ICT incorporates the efficient utilization of programs and infrastructure to establish, process, access, transform, retrieve, operate and present electronic data as well as e-information. Electronic learning, therefore, which is conceptualized as ICT utilization in the enhancement or supportive teaching and

educational learning, has transited into increased developmental proportions, (and this is most significant in HEIs). ICT and IT can therefore be used alternatively. E-information is epitomized as an "man's conceived impression" one hand, communication refers to the transition of the e-information from the region of source to the desired destination in order to add value to the receiver of information (Adekomi, 1999; Fabunmi, 2012). When there is a paradigm shift of IT from the conventional print and verbal media to the more modern digitaltechnology , this is epitomized as ICT.. No wonder Badru (2002) considered ICT to be defined as the scientific means of using computers and other communication devices to process, store and transmit information. Further, she conceived ICT as the applications, in addition to the utilization of computer infrastructure for the enhancement of communication. Put differently, a strong correlation exists concerning IT and ICT functions. According to the scholar, she further added that ICT was formed on account of the incorporation of the similar functions of IT and CT. The academic role of libraries is greatly influenced by the modern rapid progresses in ICT, hence, Dhanavandan, (2008) stated that these recent drastic ICT evolutions have resulted in the birth of new prospects such as e- library, hybrid library, online cataloguing, digital library, etc. in a bid to harness and consolidate improvement in the management of e-resources as well as service-delivery.

In the 21st century, the use of ICT evolutionalized the performance of information specialists, library administration and librarianship in general through the management of information to provide timely and improved information services in electronic form. The potential of ICT in boosting educational efforts through value-added levels of interaction which spans across the cultural sensibilities of students and academia as a whole,cannot

be overstressed. Although, Mlitwa (2004) is of the opinion that some inhibiting elements could impact otherwise in developing countries. The utilization of ICT by undergraduate students, is therefore is a sine-qua-non requirement for excellence in the academia as well as other professional spheres of human endeavor. ICT utilization is adopted to enhance the use of print resources in various HEIs, to obtain vital digital information in addition to the attainment and realization of their educational aspirations. It is therefore envisaged by (Corbett, (2002) that the technological utilization in the academia is anticipated to enhance academic goals and aspirations, develop technological capacities as well as reduce disparities within the society at large, as employers anticipate that graduates in HEIs who will be potential staffs in their organizations must have relevant ICT capabilities. Hence, in order to be relevant in this modern information era, it is expedient for university academia (for instance, HEI lecturers, administrators as well as students) must accept and utilize competence in ICT skills so as to harness education, administration and research undertakings. It is therefore crucial to state that the utilization of these technologies by the students is nonetheless, hinged upon their accessibility, capacity development as well as ease of use regarding the technologies they adopt in the course of their academic pursuits.

1.3.2 ICT Literacy skills

The capability to successfully assess, utilize, and generate e- information with the utilization of an array of digital technologies is conceptualized as Information and Communication Technology (ICT) literacy skill, but as opined by Jenkins, (2009), ICT

literacy skills do not substitute traditional and conventional forms of literacy, instead, it complements and functions as foundational development geared towards traditional forms of literacy. The impact of ICT literacy skills was verified in 1980 in the USA , when Bresnahan, (2002) disclosed that workers with greater ICT literacy skill levels received higher wages than other colleagues with lower ICT literacy levels. It is on this premise that Graham, (2001) noted that most undergraduates require ICT literacy skills to professionally advance in their careers. Shrestha, (2009), has also revealed that as students are conversant with particular ICT specializations, they become enthusiastic in their utilization. Also, Kaminski, (2009) stated that many academics in HEIs are of the assertion that students gain admission into tertiary institutions with proficiency in their utilizations and skills in the field of ICT.

Many academic scholars have elucidated concerning levels of ICT literacy skills that undergraduates acquire may influence their e-resources utilization, though some research have been conducted to evaluate and assess the correlation of ICT literacy skills on electronic resource use. Cretchley, (2007) opined that the application of e-information resources by the undergraduates will negatively be influenced by inadequate knowledge. In the same vein, Manda, (2007) reiterated the germaness of necessary ICT literacy skills to the enhancement of e-resource utilization. According to Luambano, (2004) in their field research in Dar- Es- Salaam, on e- resources use on Tanzanian research and academic establishments, and discovered that inadequate ICT skills negatively influenced the use of e-resources, stating that ICT was essentially utilized for purposes such as chatting with colleagues, peers and relatives in greater proportions other than academic obligations,

on account of inadequate skills required for the efficient utilization of e-resources. The study recommended the need for training and capacity enhancement in e- resource utilization. Virtanen, (2002) conducted a survey in Finland, on e- resource use among undergraduate respondents of Dentistry Department and reported that more that 90% of the respondents possessed had excellent or satisfactory word processing capabilities, with more than 50% having capabilities in advanced operating system management , thereby greatly improving their productivity levels . It therefore, becomes imperative at this juncture expedite action, channel resources and conduct studies based on the factors influencing e-resources use by undergraduate students in the selected HEIs, the foundation upon which this study is built.

ICT literacy skill has far surpassed the era of navigating worldwide websites alone. It includes the acquisition and management of required skills to interpret, propagate and assess e-resources for the purpose of networking, socialization, as well as collaborative purposes with individuals and organizations. Katz (2007) recognized seven constituents of ICT literacy skills namely- the definition, creation, management, accessibility, evaluation, communication and integration of information. Also, Ali (2010) reported the required information literacy (IL) capabilities of undergraduates must be harnessed to incorporate proficient search approaches, assessment and ethical uses of websites and other sources of e-information. Also, four distinctive aspects of expertise and skill development that are germane attributes of ICT literate tertiary undergraduate students, as reported by Oliver, (2000), include the capability of independent PC system operations, proficiency in the utilization of ICT infrastructure such as software for

organizing and work presentations, the capability to efficiently utilize ICT infrastructure as well as its multifaceted components as tools for effective communication, and the capability to adopt and utilize information from the internet (such as the Worldwide Web-www), media, computer, library, internet, traditional, as well as information literacy. Some benefits of ICT literate students include better problem-solving skills on account of mastery of electronic information, as well as assumption of higher learning control levels. Beyond the classroom, ICT literacy skill is sine-qua-non requirement for productivity, as well as a necessary pre-requisite for citizens in a knowledge-driven society, no wonder why administrators and employers of labor consider ICT proficiency as an essential possession by their employees. It is also on this premise, therefore, that university dons have begun to consider the significance of ICT literacy as a necessary requirement for appraising and graduating their students. This has consequentially resulted in the advent of campus-wide ICT literacy initiatives to boost the potentials and capacity of students in HEIs (Gui, 2011).
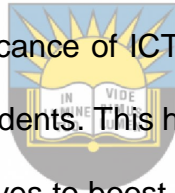
1.3.3 Impact of ICT literacy skills among undergraduate students

Adequate ICT literacy skill is germane for the effective accessibility and optimal utilization of ICT in higher educational institutions so as to acquire the desired information. ICT literacy skills are also imperative in librarianship for provision of efficient e-library services, networking, development, as well as information resources sharing, thereby enabling the advancement of e-learning, creation of e-resource infrastructure, as well as the effective utilization of e-information resources. The components of ICT involves software,

hardware, as well as other electronic facilities. Possession of ICT literacy skills to access and effectively manage the enormous information levels coupled with the capability of undergraduate students to communicate this information to different locations has a remarkable influence on the storing, retrieving, sending, and circulating of information in universities, Hence, Quadri, (2012) reported that the values and services of e-resources are better appreciated and treasured if the users of information (i.e. undergraduate students) are fortified with required literacy skills for easy update, distribution, sharing, manipulation, and rapid search, as well as to answer their information needs. Lastly, the e-resources use is becoming widely pronounced and well appreciated across academic and societal boundaries. On this assertion, it is posited impact of ICT literacy competences of undergraduate students has greatly catapulted the utilization of e-information resources. and also to achieve other research and academic goals.

1.3.4 Perspectives on ICT literacy skills among undergraduate students in South Africa

Various empirical literature appraised levels of literacy on ICT among undergraduate students revealed that ICT literacy skills are generally inadequately utilized by undergraduate students in African Universities. Furthermore, it has been revealed from literature that students could explore the merits of ICT literacy skills in their academic work, but there are diverse difficulties which must be urgently solved so as to improve ICT literacy skills in the universities. This is because the majority of the undergraduate students researched in several studies confirmed that the undergraduate respondents

faced difficulties while trying to access and utilize electronic information resources because of slow or unreliable Internet connection thereby leading the underutilization of digital resources. Further, the level of ICT literacy skills was low because the majority of the students revealed that ICT literacy skills offered by their various institutions are moderately relevant. This infers to mean that preponderance of students did not fully maximize their competence of ICT literacy skills because they were not highly relevant to their areas of research, hence, they confirmed that they have been trained and retrained on information literacy however the majority also suggested they preferred more practical and interactive lessons than theorized ones. This implies that the students were equipped theoretically but practically they cannot effectively exploit digital resources. A preponderance of students responded that they developed ICT literacy skills for course assignments. Generally, the undergraduate students have shown that they have an interest in using electronic information resources for their academic needs but their expectations were not fully met because of the above-mentioned circumstances. Further, the information literacy skills course needs to be competency-based education and training (CBET) in order to adequately build the capacity of students with critical skills and know-how vital to fully utilize the panoply of electronic information and leverage self-determined learning (heutargogy). In addition, Madondo, (2017) reported that training courses on information literacy skills equipped varsity students with essential skills for mastery of e -resources offered in their various HEIs. However, many other students strongly suggest integration of more practical and interactive ICT literacy lessons so that the students may be able to perform independent practical searches. Furthermore, ICT literacy- enhancing modules should be put in place, so as to promote undergraduate

students' academic pursuits From the foregoing, lecturers and other decision-makers in HEIs must be made to be more conversant with the relevance of ICT competence skills, as many respondents possess inadequate hands-on skills as a prerequisite for processing and retrieval of e- information from ICT subscriptions, domains and websites.

Ojedokun, (2005) reported that available statistics depict African countries as underdeveloped when compared to other global regions as regards the management and utilization of ICT literacy skills, however, this differs significantly from the status quo in South Africa, as Stilwell, (2007), disclosed that many South African HEIs are highly integrated, possessing a vast array of ICT infrastructure, due to the fact that it is an essential component of the country's National Development Plan (NDP), as well as the government's ICT Strategy document for year 2025 (also abbreviated as "infocom 2025") as clearly spelt out in NPC, (2013). A vital proposition in the NDP document is the offer of cost-effective high-speed broadband internet service in all HEIs across the country. From the foregoing, (DeJager, 2002) informed that infocom 2025 is a cooperative programme designed for South Africa, with the aim of integrating all ICT developmental projects through the networking of all South African information-based communities, organizations and agencies, with the overarching aim of achieving competitiveness across the globe. Infrastructure, policy, capacity enhancement concerns, as well as ensuring local content standards within ICT-based establishments, and the advancement of capacity in the utilization of telecommunications technologies form part of the envisaged goals as entrenched in the infocom 2025 document. Also, the Department of Higher Education and Training (DHET) in South Africa provides soft-landing for

universities in the area of funding for renovation and overhauling of ICT infrastructure, as well as providing funds and grants for ICT capital projects such as modern ICT hardware, software and infrastructure. Also, Ramlogan, (2006) disclosed that South African HEIs fund several courses on ICT literacy skills for the purpose of enhancing the intellectual capabilities of undergraduate students. It is on this premise that Satgoor, (2015) opined that despite the huge investments in ICT literacy skills by universities, there are unanswered questions which centre on counter-productivity on account of inefficiency and inadequate proficiency in exploitation of digital resources. It is on this premise that Ashcroft in year 2011 epitomized that, while discussions surrounding the adoption of electronic materials, such as improving the mindfulness of users, the multiplying and multiplicity of keywords have been determined, discussions pertaining to e-book provisions remain unresolved. No wonder therefore, that Mogase, (2015) reported the under-utilization of e-resources in HEIs due to inadequate ICT literacy skills. Furthermore, Pietersen, (2015) noted that, while academic institutions have enjoyed the merits accruable from e-collections development, the adoption other e-information resources (for instance, e-books) seems to be developing at snail speed.

1.3.5 The Influence of demographic factors on the utilization of e-resources among undergraduate students

According to Longman Dictionary, (2007), demographic variables are the physiognomies, characteristics and features of the human population, which can also be conceptualized as the socio-economic variables of a population, and these include age, gender (or sex),

level of educational attainment, level of income, profession/occupation, marital status, religious conviction, death rate, birth rate, the average family size, the average age at marriage etc. Individual demographic components influences the utilizationdigital information materials. In this perspective, researchers have discovered that Individual demographic components relating to age, gender, income level, country level, and professional qualifications, greatly influence the usage of the EIR by its users (Goodson, 2000; McCormick, 2001; Abu-Qudais, 2010; Mufutau, 2012).

1.3.6 Types of demographic factors

The types of demographic factors that exist in literature are age, gender (or sex), educational attainment level (e.g. matric, MSc), religion (e.g. Christianity, Islam, etc.), language (e.g. Xhosa, Zulu) and marital status (e.g. married or single). Some of the relevant demographic factors to this study are hereby defined below.

Gender: This denotes the socially- fashioned comportments, actions, roles, and special features that a society comprehends as suitable for men and women

Education: educational qualifications refer to diplomas, certificates, degree, professional titles etc. that an individual has accomplished through private, part-time or full-time study, whether conferred locally or internationally by educational authorities, as well as special professional or examining bodies.

Age: Age is conceptualized as the longevity of a person or phenomenon that ever lived or existed. WHO, (2011) states that age is the longevity or amount of protracted time of one's existence and life duration.

Marital status: This connotes an individual's civil standing or status in conformity to marital customs or laws attached to the individual's country, i.e. as relating to singles, married, divorced, or widowers. These demographic factors are further elucidated in the literature review.

1.3.7 Determinants of gender on the application of e-information resources

The concept of gender has undoubtedly been widely acknowledged in existing literature as a potential and dynamic aspect determine the exploitation of dital information materials as well as ICT, yet, Steinerova (2007) elucidated that studies pertaining to gender dissimilaritiesare still on-going. The literature is also abounding with several research efforts on user behavior, that reveals propensities of the male and female gender in their manifestation of dissimilarities pertaining to their physiognomies and features in utilizing digital e-resources. In spite of this, there seems to be to be rather few literature that are centered on gender-inclined dissimilarities among West African information gurus as pertaining to the utilization of e-resources. A better grasp of the gender concept could be gained in social and psychological literature where the social, mental and physical, dissimilarities of gender are elucidated. Furthermore, Fisher, (2005) stated that findings

of some experiential studies have shown that dissimilarities could manifest in the patterns gender-inclined utilization of e-information resources.

Studies by Losh (2003) reveal that gender dissimilarities are pertinent in the exploitation of digital resources amongst the male and female gender. Also, as reported by Fallows (2005), the features of internet communications are mostly embraced by women, while men have penchant for information retrieval, establishing online connections and transactions, as well as for entertainment purposes and games. By the same token, Steinerova, (2007) affirms that gender persona can be manifested in both male and female behavioral qualities on cultural and social considerations. It is on this premise, therefore, it is assumed that males utilize e-resources more than their female counterparts. On a contrary note, however, Alshankity, (2008) did not reveal major gender dissimilarities in her study concerning the overall internet usage levels among Saudi Arabian faculty staff. Enochsson (2005) affirms in his study that women express low proficiency levels, as well as feelings of anxiety in their utilization of computers on account of their cultural and social gender sensibilities of gender. Further, Tella (2008) concurs with these verdict, observing that one of the frequent themes regarding ICT under-utilization is the absence of relevant proficiencies, with women mostly negatively affected, likewise, Jenson (1999) reported that an vital factor in shaping the attitude and anxieties of females is through the use of ICT and e-resources utilization. Therefore, skill acquirement training programmes should be embraced by both female and male information specialists and should exhibit mastery in their utilization of e- resources recommended for use by the HEIs. Subsequently, this will offer a leverage for intellectual

cooperation and interaction with town and gown (i.e. the university overseers, professional friends and colleagues and the society at large), in addition to recognizing their needs in the information- seeking palace. It is on this basis, that Schilling (2012) declared that library–based training programmes serve as interactive platforms for educationists, university staff and students, thereby advancing the course of information literacy skills development (Ren, 2000). The advancement of ICT proficiency skills in e-resources utilization surpasses gender divides, as the navigation of the information landscape is sine-qua-non to both the male and female gender, despite affirmations that gender dissimilarities in terms of usage levels, attitude, and technological know-how abound in existing literature. Laying credence to this affirmation, it is therefore noteworthy to conduct this research because it sensitizes the academia on gender egalitarianism or inequalities in the perspective of information retrieval skills and usage of e-information resources among students. Scholars have conducted several studies on how gender influences e-resources use, for instance, Schumacher, (2001) informed that negative attitudes towards electronic resources use were most demonstrated by women than men.

1.3.8 Determinants of age on the utilization of e-information resources

Literature affirms that another element influencing e-information resources use in HEIs is the age factor, which is the longevity of time that an individual or object lived or existed. Age has been found in various empirical studies to conform and correlate with e-resources use, for instance, Bakkabulindi (2011) expressed the inverse relationship that exists between e-resources use and age. The discovery is in conformity with the

propositions of theoreticians such as Schiffman, (2004) on the premise of their observations opined that age is a crucial factor in the utilization of innovations, as well as user innovators which portray to be newer than older users of technology. In conclusion, aged and ageing professionals, senior managers and the generality of students needed to be given further reassurance, in addition to special training regarding e- resources and ICT usage, with the assistance of ICT- literate stakeholders are called upon to offer. According to Okiki (2011), age is a variable which lays credence to ICT and e- resources use. It is also well-known that the newer generations are highly computer-proficient. For instance, Laguna (1997) stressed that there were striking age dissimilarities on ICT tasks, as assessed by earlier generations of adults making few factual decisions over protracted time to make their decisions than younger adults. Also, this assertion was sustained by Waldman (2003), Al-Saleh (2004), who discussed that age is one variable that conforms to the use of computers and e- resources. Older learners face computer anxiety on account of less exposure to computers, resulting in heightened computer anxiety, as younger learners seemed more comfortable adopting new technology. In the same vein, Delgado- Gomez (2002) researched on the younger adults and computer-generated libraries located within Spain, and epitomized that the underlisted statements are the features of young adults, and these are that: they are not interested in reading fiction, as it is assumed to be a time-wasting exercise, they utilize information for academic purposes, but, in case they discover faster means and methods in their utilization of required information, they will gladly utilize it, they engage their free periods for purposes such as playing music, watching TV, or chatting with friends. It is an established statement that the newer generation of individuals are introduced to ICT, especially with the

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introduction of mobile phones. White (1995), discussed that about 75% of the Mass Communication Faculty respondents made use of computer-based communication systems, which were predominantly younger faculty members. Also, Rabnovictchs (1995), Laguna, (1997) opined that there were a preponderance of age dissimilarities regarding the use of computers, as measured by their older counterparts who make less correct decisions than the younger adults. In the same vein, Hammerschaig, (1997), Comber, (1997); Avigdori (2000), as well as Corbel, (2002) also affirmed the germaness of age in e-resource use. It was also postulated (Hunley, (2005) in a USA-based ICT utilization research that teenagers and young adults, with ages ranging from 16 and 24 years were categorised as higher ICT users than the older ones Correspondingly, Hoskins (2005) attested to the fact that the figures on hits, in addition to length of accessibility to e-resources was related to age. Chu, (1994) revealed a negative correlation between the use of electronic mail and age. Colley, (2003) also testified that the older girls of ages between 15-16 years made less use of CD-ROM than their younger friends of ages 11-12 years. Also, as put forward by Mungania (2003), in his elucidation on utilization of e-learning, proclaimed that 80% of the surveyed respondents who were middle-aged (i.e. about 45 years of age) are the predominant e-resources adopting audience.

1.3.9 Determinant of religion on the exploitation of electronic resources

Adetimirin (2008) in her enquiry centered on dynamics of undergraduates' use of e-resources in some Nigerian HEIs discovered that the Muslim respondents who predominantly used e- resources thereby constituting the highest number of respondents

among the nine groups surveyed. She also opined that the Christians respondents made use of e- resources less for academic tasks. Le Cornu (2008), exemplified the provision discovery for philosophy and religion on account of their utilization of Ebscohost has enhanced e- resources use by HEI undergraduate students of theological institutes, and that it took protracted time before online resources were utilized in theological purposes in theological institutes. This was also reinforced by Odewale, (2004) in his study of theologians and student priests in Lagos-based theological establishments, that the most commonly used e-resources for accessing theological and religious literature by the respondents were ATLA online catalogues.

1.3.10 The determinant of educational status and Income on electronic resources use

According to Wolf, (2005), he stated that educational experience and background of a student's parents may dictate statistically significant roles as regards e-library visits .This stems from the fact that better-educated parents have penchant for education values, and may have indoctrinated this notion in their children right from their childhood. This includes taking their children places of educational interest, as well as building their ICT capacity from their foundational years, thus, leading to these values being carried over to their tertiary education periods. (Olatokun, (2009), disclosed that educational attainment determines the greatest effect on the ability to utilize ICT infrastructure. In the same vein, Valletta, (2003) reported that less-educated information pursuers are being more underprivileged in using ICTs facilities. Laying credence to this fact is DeBell's (2006) report that the educational level of parents directly correlates with the internet-using

proportion of students, for instance, a correspondingly strong correlation exists amongst accessibility to use internet facilities internet usage at residences and levels of educational attainment of respondents, as revealed by the US census data. In relation to Okuwa's (2007) research, he opined that it is highly predictable that students of literate parents will be better ICT users in comparison with other students whose parents are less-literate or uneducated. Education is consequently imperative, beyond the deference to the acquisition of required capabilities to utilize e- resources, it further relates to the enthusiasm it proffers when utilizing electronic resources.

At this juncture, it is pertinent to state that demographic factors as well as socio-economic challenges of e-resources use have the capacity to confine, delay or block to electronic search strategies, and ultimately frustrate e-resource use. Inability of information users to prevail over these obstacles could also hamper effectiveness and efficiency of e-resources use among electronic information users. At this juncture, it is germane to state that this research is geared towards the advancement of ICT theory and practice, as well as policy formulation of ICT development in HEIs. Also the implication of this study, as elucidated in the opening paragraph of this chapter, therefore, enhances the awareness, belief and acceptance of ICT literacy skills as well as determining the demographic factors influencing electronic resources utilization.

1.4. THE RESEARCH SETTING

This study involves the investigation of ICT literacy skills and demographic factors as causes influencing the utilization of e-information resources among undergraduate UFH and RU respondents. From the foregoing, the HEIs designated for this study are the Universities of Fort Hare and Rhodes. These two institutions are discussed below.

1.4.1. Institutions study

The Eastern Cape Province of South Africa comprises of four federal universities, and these include the Universities of Fort Hare, Nelson Mandela, Walter Sisulu, and Rhodes. The two universities surveyed in the province for this study are the Universities of Fort Hare (UFH) and Rhodes (RU). The reason for the selection of the two institutions is because they possess heterogeneous characteristics and physiognomies as the student populations are predominantly blacks and whites respectively, which will consequently reduce bias in student population interviewed. Below is a brief narrative of the selected HEIs.

Rhodes University

Initially Rhodes University College, Rhodes University, was established on May 3 1904 and later inaugurated on March 10, 1951 by an Act of Parliament, with Sir Basil Schonland as its first chancellor. The then University College of Fort Hare was jointly affiliated to the University of Rhodes until 1959 (as found in www.ru.ac.za). The University of Rhodes is a federal government-established HEI established in the heart of Grahamstown in

Eastern Cape, South Africa, and is positioned around 33°18′49″S 26°31′11″E33°18′49″S 26°31′11″E. Named after Cecil Rhodes, Rhodes became a University College, on account of the Rhodes Trust educational grant. In 1918, RU catapulted into becoming a principal University college in South Africa, and by 1951, RU became a full-fledged independent university. in the 2015 academic year, RU had an enrolment of over 8,000 studentsa figure out which a total of 3,600 were living in 51 official campus residences, with the other students (popularly referred to as Oppidans) residing in off-campus residences, digs, or within their native residences within the town. Like many other starting HEIs, Rhodes University encountered challenges which threatened its existence in the early years but was able to weather the storms with the provision of government grants as well as upkeeps from local municipalities (www.ru.ac.za). According to information available on the Rhodes University website above, its vision statement is to be an internationally acclaimed academic centre of learning and research, which affirmatively portrays its unique identity on the African continent, and which is devoted to the cultivation and preservation of democratic principles/standards, academic liberation, competitive scholarships, sound ethical disposition in addition to social responsibility and communal values. It is on this premise of this visionary pursuit therefore, that the HEI endeavors to nurture and develop globally recognized alumni who are great analytical and innovative thinkers, society molders, eloquent, who are greatly adaptable and well composed, with penchant for research and learning; and to endeavor, through research, teaching, and public service, ensure the contribution of their quota to the improvement of universally acknowledged scholarly endeavors and the emancipation of the Eastern Cape and Southern Africa in general.

The University of Fort Hare (UFH)

UFH ranks among the oldest HEIs in South Africa and indeed the African continent at large, having been founded in 1916 as an HEI for the African race. The institution was challenged with crisis that almost resulted in its near closure in the year 1999; on account of a circumstances hinged on the unfair apartheid treatment, and concomitant aggravation emanating from ineffective university administration and diminishing student population. UFH has a reflective history that not only equates to its peers, but replicates the incongruities of the modern South African history. Today, however, it has overcome all odds and is striving towards being an efficient intellectual citadel of learning, on account of its essential contributions to socio-economic and political spheres of development across the various political strata of national life (UFH, 2009). The university has three campuses the main campus being at Alice which is a small rural town; the other two campuses are located in East London and Bisho respectively. In the 2011 academic year, the university had over twelve thousand (12000) registered students of which 1880 were postgraduate students. UFH comprises of five faculties, these are law, Management and Commerce, Science and Agriculture, Social Sciences and Humanities, and education, and offers 189 degrees and diplomas within departments in the different faculties.

UFH was challenged in its growth, with a lot of challenges ranging from economic to political, and this later led to its conversion to a college for Xhosa natives. According to the university's website (www.ufh.ac.za), the UFH was a racially-compliant institution,

with black, Indian and coloured students studying in unity, though the staff/worker component was predominantly white. At some point, UFH was reduced to one of the „Bush Colleges‟ that were instituted in native lands. However, the university survived notably due to its fortitude, under its new and dynamic administration since 1999, pulling backwards from the vestiges of academic breakdown, to repudiate any misjudged efforts at federal levels regarding the rationing of HEIs that would result in total institutional decay or prevent its unique impression to be felt. Since 1994, UFH has been growing and functioning in East London, Alice and Bhisho campuses, which as alluded to earlier, formerly belonged to RU (www.ufh.ac.za).

The vision of the UFH reads as an efficient, unbiased and self- sustaining university in Africa, which is dedicated to learning, teaching, training as well as providing excellent research standards through dedicated service to scholars, students, and the society at large. Further, the university's mission statement is to make provision regarding unequalled internationally acclaimed standards in the process of educating the society by consolidating on the improvement of essential ethical and social, through the application of technological, socio-economic and scientific knowledge, geared towards the national and worldwide emancipation. The UFH community is asserting that the germane educational role to inculcate in the life of students, virtues of individual and communal respect, forbearance and communal roles in an academic atmosphere of dialogue, freedom, understanding, as well as companionship as entrenched in the UFH charter. One of the university's central tenets is to embark on training, teaching and research geared towards the conscientious enhancement of scientific and societal benefits for human development, being cognizant of the challenging characteristic in the inordinate

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utilization of knowledge. In its strategic plan 2009-2016 document, UFH"aspires to continually remain a significant skill and knowledge producer, as well as a thought leader…."

1.5 RESEARCH PROBLEM

In many HEIs worldwide, much effort has been wielded to install ICT infrastructure, build capacity and develop e-resource amenities and services for the harnessing of ICT literacy skills among undergraduate students through efficient methods. In African universities (and the designated HEIs in this study inclusive), the undergraduate students find it problematic in their accessibility to e-information, also, in the event of information availability, it is insufficient and under-utilized, no wonder why Hsieh-Yee, (1996); Ramayah, (2005) lamented that Inspite of the enormous feat in e-resources, the level of technology utilization among undergraduate students in HEIs, especially in developing countries is still low. It will also be of interest to note that, as opined by Hammond, (1994); Okello–Obura, (2008), most undergraduate students' references do not include e-resources. Further, a large body of literature (such as Thong, 2002; Ramayah, 2006; Mallick, 2010) validates that even when e-resources are available, the target group (i.e. undergraduate students) may either not utilize or underutilize the facilities. In addition to the above, informal reflection by the researcher revealed that most universities in Africa pay huge amounts towards the establishment of ICT infrastructure, ICT literacy skills capacity building, as well as subscribing to various EIR for research and learning purposes. Notwithstanding, e-resources utilization by users (i.e. students) is

discouraging. It is also abysmal to note by Bentil (2011), that over 50% of sampled students and lecturers were uninformed e-information resources availability. It is on this premise, therefore, that any proof from research that is premised on unraveling the issues that determine this impassive attitude towards EIR utilization particularly in the selected case study universities in Eastern Cape is of high demand. Nevertheless, Xie, (2006) disclosed that empirical scholarship in this field is still at its mushrooming stage. The present study is therefore timely and valuable, as it contributes to filling the identified empirical research gaps in order to inform policy on e-resources in academic institutions of higher learning, with particular emphasis on the selected case study universities in Eastern Cape.

Despite the capabilities that ICT literacy skill offers in the academia today, research has discovered occurrences of digital divide regarding and the accessibility and utilization of digital resources amongst male and female undergraduate students. Undergraduate students have dissimilar demographic and socioeconomic backgrounds, sensibilities and experiences which create a dichotomy in their reaction to and handling of technology, which ultimately affect the utilization, accessibility, as well as the retrieving of e-resources. However, inadequate access, or inadequate requisite ICT literacy skills among undergraduate students can negate their electronic resources usage. It is on this premise, therefore, the study sought to investigate the problems associated with ICT literacy skills and demographic factors as causes affecting the utilization of e-information resources among UFH and RU undergraduate respondents.

1.6. STUDY OBJECTIVES

In this research, five objectives of study were articulated at offering a comprehensive perception of the research questions which were highlighted below. Mathipa, (2015) recommended not more than five research questions at the PhD level. The study objectives are as follows:

1. To ascertain how the UFH and RU undergraduate respondents in the selected HEIs in the Eastern Cape access e-information resources

2. To determine the influence levels of ICT literacy skills on the utilization of e-information resources by the undergraduate respondents in the selected HEIs.

3. To determine the frequency and problems encountered in the utilization of e-information resources by the undergraduate respondents in the selected HEIs.

4. To ascertain the contributions of demographic factors on the way they are utilizing their e-information resources by the undergraduate respondents in the selected HEIs.

5. To determine the perceptions and attitudes of undergraduate students towards e-resource utilization.

1.7 THE RESEARCH QUESTIONS

The major essence in this study was to provide answers to the key questions quoted below, and also to providing solutions to the underlisted research questions on ICT literacy skills and demographic factors as factorsinfluencing the exploitation of e-information resources among undergraduate respondents in the Universities of Fort Hare and Rhodes, and the degree of meeting undergraduate students' information requirements in order to proffer solutions to the utilization and accessibility of the e-information resources. The following questions underlisted provided guidance to this research:

1. How do respondents (i.e. the undergraduate students) in the selected HEIs in the Eastern Cape access e-information resources access e-resources?

2. What is the influence level of ICT literacy skills on the utilization of e-information resources by the undergraduate respondents in the selected HEIs?

3. What is the frequency and problems in the way by which the UFH and RU surveyed undergraduates utilize e-information resources by the undergraduate respondents in the selected HEIs?

4. What is the contribution of demographic factors on the utilization of e-information resources by the undergraduate respondents in the selected HEIs?

5. What are the attitudes and perceptions of undergraduate students towards e-resource utilization?

1.8 RESEARCH HYPOTHESIS

The following hypothesis was tested in the study

H_{01}- There is no significant correlation between ICT experience and levels of ICT proficiency of undergraduate respondents towards their utilization of e-information resources.

H_{02}- There is no significant correlation between the perception and attitude of undergraduate respondents towards their utilization of E-journals.

1.9 DELIMITATIONS OF THE STUDY

There are usually challenges in any research work. From the foregoing, this study experienced some challenges. The challenges confronted in the course of this study include: Harsh weather (e.g. winter and heavy rainfall periods) in the course of administering questionnaire and in-depth interview, accommodation problem during the researcher's stay at Rhodes University, impatience of respondents in the course of answering questionnaire and in-depth interview, lateness to Rhodes University due to challenges of transportation from UFH, Alice to Rhodes University, Grahamstown. As a result, many of the undergraduate students would have started their school activities. However, these delimitations did not adversely affect the objectives nor the overall results of the study, as their effect was very insignificant, as these challenges were surmounted

with the patience and resilience of the researcher. At other times, new appointments were fixed so as to enable the researcher collect the required field data for this study.

1.10 SCOPE OF THE STUDY

The research scope of this study investigated the ICT literacy skills and demographic factors as determinants of electronic resources use, thereby focusing on undergraduate students in Fort Hare and Rhodes Universities. The choice of the HEIs is premised on the institutions experiences during their transformative years as anticipated by the Department of Higher Education (DHET). Further, the selected universities are heterogeneous in nature.

1.11 SIGNIFICANCE OF THE STUDY

This study will enhance existing literature on ICT literacy skills and demographic factors as determining factors of electronic resources effective utilization among UFH and RU Undergraduate students by providing insight into those demographic factors and skills that influence their effective utilization of e-information resources. This study provides a clear-cut understanding of undergraduate students' utilization of e-information resources at universities and may chart new courses for research on e-information resource literacy in the selected HEIs.

The study is germane to the university administrators because they need to provide electronic resources and the enabling environment for undergraduate students to utilize them at any level. This study is also significant, as it makes effort to emphasize the need

for the universities to establish functional ICT centres to enable students to have the required ICT literacy skills. This study is proposed to professionally guide the HEI leadership to proffer improved information service delivery through e- resources, for improved accessibility and utilization by the undergraduate respondents. It is therefore envisaged that this thesis proposes the promotion of academic excellence, as well helping HEI administrators in conceptualizing a more concise and comprehensive knowledge of students' e-information requirements as well as their challenges. This study therefore provides an essential input regarding the knowledge-base in South African universities.

1.12 THEORIES AND MODELS

From the diverse array of research on ICT literacy skills, Alharbi, (2014) commented that several postulations geared towards unraveling the correlation amongst the determining factors of technology acceptance have been propounded. Investigations regarding the adoption of technology and its utilization is a constantly transiting field of man's endeavor, as reasons adduced by Al-Qeisi, (2009) stated that this is due to new and evolving technologies on a continual basis. In light of this fact, Saade, (2007); Al-Shafi, (2009) posited that several technological adoptions of models and theories have been utilized to define the acceptability or usage of a definite technology (Venkatesh, 2003; Al-Quesi (2009), and according to Suhendra, (2009); Ahmad, (2011), information systems, psychology and sociology disciplines serve as the origins of these models and these include: Ajzen's (1980); TRA, Davis' (1986) TAM, and also Rogers' (1962) Diffusion of Innovation (DOI) theory. TAM, DOI, and TRA has been found to be useful in addressing

the issue of ICT literacy skills and demographic factors as determinants of electronic resources use (Oye, 2014). These theories are comprehensively epitomized in the succeeding chapter (i.e. the subsequent chapter,), which encapsulates the theoretical framework guiding this research..

1.13 RESEARCH METHODOLOGY

Numerous paradigms in research are existent in literature, and their applications vary depending on the subject of study. In this study, interpretivist framework was adopted, which involves the application of theories, in addition to the multi-methodology (or mixed methodology). In accordance with Chigada"s (2014) proposition, he posited that the commencement of research stems from the adoption of a model or theory, and then crystalizes into an identified problem statement in research, and the choice of the selected HEIs was premised on the assumption that they belong the group of oldest HEIs that underwent periods of transformative experiences in their developmental history, and are believed to have state-of-the-art ICT infrastructure that harness ICT developmental initiatives. Further, the researcher of this study engaged in the distribution of research questionnaires, conducted sessions of in-depth interviews, and reviewed relevant existing literature as data collection strategies (which were well-detailed, structured and analyzed in SPSS environment in addition to adopting the ANOVA technique. The results are captured in tables, charts and figures and presented using inferential and descriptive statistical methods. In order to confirm the veracity and validity of data collected, the researcher was guided by adaptations of draft questionnaire samples from similar

research in existing literature (Jain, 2006; Manjit, 2007; Hussein, 2011;). Reliability was accomplished by ensuring that majority of adaptations from previously researched questionnaire were graded by Cronbach's Alpha's scaling technique. Also, the test to ascertain reliability of research methods and instruments was accomplished by test-running the survey questionnaire (at Lovedale College, Nstelamanzi, Alice), and by triangulating the approaches of data collection and the adopted research instruments. The study ensured strict compliance with the ethical policies of Fort Hare and Rhodes Universities. Furthermore, the researcher obtained official approval from the designated officials and committee of the corresponding HEIs surveyed. Furthermore, it is germane to posit that the undergraduate respondents were acquainted about the aim and significance of this research, in addition to assuring the respondents of their fundamental rights, safety of information confidentiality, right to consent, and regard for their personal opinions in the course of data collection and reportage. Therefore, comprehensive discourse of the research methodology is exemplified in the Fourth Chapter (which deals with the research methodology). Finally, it is important to state that the core argument is in alignment with the information provided in this chapter such as the study objectives, research questions, methodology, etc. The researcher thought it expedient to define some technical concepts that are important to this study, which is succinctly defined below.

1.14 OPERATIONAL DEFINITION OF KEY TERMS

Availability: These are the digital materials that can be seen and used within and outside the HEIs.

Accessibility: These are processes whereby an electronic resource is not restricted to a specific user.

Information: According to Post, (2005), this epitomizes data that has been managed, structured, and incorporated to provide comprehension and insight, and stems from an individual sensitivity or reaction to a challenging situation or gaps in information, in which the individual user's beliefs, knowledge, and environmental model become unsuccessful in charting a pathway towards the satisfaction of the user's goals (as stated by Case, 2007). As regards the confines of this study, information is conceived as the intellectual deficiencies of undergraduate students in conducting their academic responsibilities, i.e. learning and research, at UFH and RU respectively.

Information awareness: According to Ani, (2008), awareness is defined as the capability to unravel a state of affairs or condition, as well as the cognizance about the current existence of a phenomenon, subject or situation, anchored on experience or information. As further disclosed by Akpojotor (2016), awareness is defined as an insight to conditions, circumstance, realization, which recognizes realizes and comprehends information about the curiosity or acquaintance in a specific condition or situation. In this study therefore,

Information awareness is regarded as undergraduate students' access levels, awareness and exploitation of digital information infrastructure and services at the Universities of Fort Hare and Rhodes, Eastern Cape, South Africa.

Information use: Meyer (2003) refereed to Information use as the method of information usage relating to assembling, searching, retrieving and transmission of information. The use of Information is hitherto regarded in this research as those obligations in which undergraduate students who are duly registered at the UFH and RU, obtain and utilize e-information resources for their educational pursuit.

Information Technology: This refers to the products, procedures, standards and inventions that are utilized to retrieve information. IT refers to the components of information system, and drives the progress of new information systems.

Information and Communication Technologies (ICTs): This is broadly referred to by Alhassan, 2012) as an amalgam of telecommunication and computing technologies for acquiring, storing, retrieving and disseminating information. Also, the information and library science international encyclopedia of 2003, conceptualizes the usefulness of ICT in defining the design and application of systems and equipment for substituting data via electrical means between two or more workstations.

Information literacy (IL): As defined by the Association of College and Research Libraries (ACRL, 2000), Information literacy is an amalgamation of capabilities (skills) required by individuals to assess, locate, and utilize the needed information effectively. Based on this study, therefore, IL highlights proficiency in the search and the effective

exploitation of digital resources by undergraduate respondents in the universities of Fort Hare and Rhodes.

ICT literacy skill: This refers to the capability to efficiently and proficiently assess, evaluate as well as produce e- information using a wide-ranging digital tools. It ensures the recognition and usage of that potential ability to effectively manage and manipulate data, in order to acieve pervasive distribution and conform them to new formats". ICT literacy does not substitute for other conventional values of literacy. It is hinged on the foundational constructs of conventional literacy values (Jenkins, 2009). ICT literacy refers to the amalgam of two concepts namely ICT and literacy; however, it goes beyond combining the two terminologies. Digital or e-information resource is a metaphorical exemplification of information, and literacy means the capability to acquire knowledge, think critically and write coherently (Warschwer, 2010)

Electronic: As stated by the Oxford Dictionary of New Words, it refers to an adjective involving processes and activities empowered through computer utilization, often by the aid of telecommunications linkages.

Electronic resource: These are resources comprising of computer data and /or program(s) which is incorporated to be read and manipulated by ICT infrastructure and usage of exterior appliance or instrument that are directly connected or linked to the ICT infrastructure or without contact (i.e. distantly or remotely) via a system such as internet technology (Reitz, 2004). Further, e-information resource therefore refers to any source of information than can be retrieved by undergraduates with the aid of ICTs. Examples of

electronic resources include e-journal which are retrieved on the Internet, ICT infrastructure, CD-ROM, or e-resource networking facilities (Watts, 2006).

The E-information resource environment: This is epitomized as the adoptions and utilization of ICT apparatuses for the purpose of aiding research efforts (Grace, 2004). E-information environment envisages wider accessibility and utilization of ICTs by the academia in HEIs.

E- Information Usage: This is defined as the capability to efficiently utilize e-resources material in the conduct of research endeavors (Borgman, 2000). Therefore, utilization articulates e-resources' use via ICTs. It is also defined as the frequency of usage pattern of electronic resources among undergraduate students.

Demographic Factors: These are variables which are physiognomies of the human population. It can also be seen as statistical socio-economic characteristics or variables of a population.

Undergraduate Respondents (or Students): For the purpose of this research, undergraduate respondents give credence to the category of respondents who are pursuing a Honors or bachelor's degree at the Universities of Fort Hare and Rhodes.

1.15 STRUCTURE OF THESIS

The content of the structure of the chapters comprising the thesis is presented in the form of subsections conceptualizing the specific content covered in each chapter. This study

covers eight chapters, and each chapter provides both introductory and concluding statements accordingly.

Background to the Research (Chapter 1): This introductory chapter encapsulates the study preamble, as well as the contextual background to this research it pinpoints the core argument, the statement of the study problem, questions emanating from the research, the study objectives, justification in addition to the delimitations discovered in the course of the research. The chapter offers an introduction to the topical issues namely ICT, ICT literacy skills and demographic factors, etc. The chapter provides a brief introduction to the theories (e.g., TAM, DOI and TRA Models) and how they align with the core arguments of this study and finally, the research methods (e.g. paradigms, quantitative and qualitative approaches, survey research design and data collection instruments) underpinning the study.
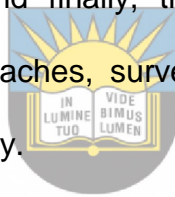
Theoretical Framework (Chapter 2)**:** Chapter 2 elucidates a comprehensive explanation of models and theories guiding the research, in addition to how it was aligned with the findings of this study, which states that ICT literacy skills and demographic factors are determined by the usage of e-information resources and this assertion is further buttressed with the awareness, belief and acceptance of electronic resources (as elucidated in the theories used), as discussed in this chapter as the core argument determining the exploitation of digital resources. The TAM, DOI and TRA Models are also described. A mapping aligning the study objectives and questions emanating from this research to the major elements of the theories is tabulated.

Literature Review (Chapter 3)**:** The core argument of this chapter offers an appraisal and evaluation of related theoretical and empirical literature which supports the total findings of this study, that ICT literacy skills and demographic factors determine the utilization of electronic resources.

Research Methodology (Chapter Four**):**   chapter 4 delivers the discussion on interpretivist paradigm, research methods. This research adopted the research survey method. The data collection methods include a questionnaire, interview schedule, observation and document review. Reliability and validity were achieved by pretesting and triangulating the data collection methods.   Also, the in-depth interview of this research aided the researcher to unravel the assertion that the undergraduate students in the selected institutions were under-utilizing some of these electronic resources, while the results derived from the data collected also elucidates the assertion that some of the electronic resources are under-utilized by the respondents, and this is in conformity with the total outcome of this study. The universities studied include the Fort Hare and Rhodes Universities, and the target population consisted of undergraduate students. Permission was sought from the assigned ethical clearance committees at the HEIs under-studied.

Chapter Five: The key argument in this chapter states that some demographic elements, e.g. gender, age, and language (as found in tables 5.1, 5.2 and 5.3) determine the utilization of e-resources, and this led to the findings of this chapter and total findings of this thesis that demographic factors greatly influence e-resource utilization.

Chapter Six: The key argument of this chapter states the influence of ICT literacy skills on the utilization of e-resources among UFH and RU undergraduate respondents, which

is aligned with the findings of the chapter indicates that some of the undergraduate students (as indicated in tables 6.1 and 6.3) are under-skilled in their ICT literacy levels. This assertion is in conformity with the total results derived from this study. Further, this chapter provides descriptive and inferential statistics including thematic analysis, on proficiency levels of ICT.

Chapter Seven: The key argument of this chapter states the attributes and perceptions determine e-information resource utilization among UFH and RU undergraduate respondents, as discussed in tables 7.1 and 7.2. This position is aligned with the findings of the chapter, and thesis.

Chapter Eight: **Conclusion and Recommendations**: This chapter summarizes the research results, in addition to providing a synopsis of the concluding remarks and research recommendations based on the five study objectives that were considered. The implication to research, policy practice and theory is discussed.
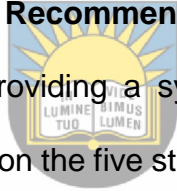
1.16 CONCLUSION

This chapter provided a discourse on the core argument of this research, research problem, study objective, research question, etc. and laid the foundation for the subsequent chapters in the thesis. The chapter further discussed issues related to this study as briefly discussed. The core argument of this study is that ICT literacy skills and demographic factors have influenced the utilization of e-resources. From the foregoing, the adopted theories (namely TAM, TRA and DOI) support of this assertion. The theories show that technology has developed the capacity of users' PEOU and PU towards

information resources. It could be further stressed that despite the acceptance, adoption and availability of some e-information resources by HEIs, many of the respondents still under-utilized them, thereby hindering their satisfaction levels and expectations from their institutions, as theorized by the Technology Acceptance Model, which proposes that behavioral intention is influenced by the actual exploitation of information technology, and has been empirically proven to be highly valid. Furthermore, the key element required for the growth of any society is information, as it influences decision making and enhances the lessening uncertainty levels. Information researchers in academic libraries are custodians of information. Apart from their widely acknowledged role of information service delivery, they advance the use of electronic resources by planning and organizing training programmes. Also, the concept of ICT is discussed in this chapter, as the methods of obtaining, retrieving, processing, transmitting, and disseminating ideas, information or perception through computers and other communication facilities, and this leads to the concept of ICT literacy skills, which involves the recognition and use of e-resources. The influence of ICT literacy skills on e-resources utilization cannot be overstressed, due to the fact that it ensures access and effective management of the enormous information levels coupled with the capability of undergraduate students to communicate this information to different locations has a remarkable influence on the storing, retrieving, sending, and circulating of information in universities. The perspectives of ICT literacy skills and the influence of demographic factors on e-resources use are also discussed in this chapter. Furthermore, the research problem necessitating this research, as well as the aim, study objectives, research questions and hypothesis were discussed. It was also considered expedient to disclose the research challenges, scope and

significance of the study were elucidated, as this research will enrich existing knowledge on ICT literacy skills and demographic factors as determinants of electronic resources use. In addition, the research method (which is the interpretivist framework) was adopted in which the use of theories, quantitative and qualitative approaches were used. Several key concepts to this research were clearly defined in this chapter, such as availability, accessibility, information, information awareness, information use, ICT, information literacy, etc. Finally, the thesis structure was clearly outlined in this chapter. This study therefore inculcates and enriches scholarly discourse on the knowledge of ICT literacy capacity development and demographic factors on e-resources accessibility and utilization among the UFH and RU undergraduate respondents. The next chapter (i.e. Chapter Two) exemplifies the significance of the adopted theories and models for this research.

CHAPTER TWO

THEORETICAL FRAMEWORK

2.1 INTRODUCTION

The central theme of this research was to survey information Communication and Technology (ICTs) literacy skills and Demographic factors as determinants the effective utilization of e-information resources among UFH and RU undergraduates in selected Eastern Cape HEIs. According to Chinn (1999), a theoretical framework of a study is structured in such a way that will unravel the difficulties encountered in the course of the study. The core argument of this chapter is that the usage of e- resources among undergraduate respondents can be predicted with the implementation of the framework adopted for this research. The purpose of the framework in study is the platform upon which the hypothesis is evaluated in the course of defining its veracity (Creswell, 2009). According to Chigona (2008), there are some basic merits of adopting research frameworks in the academia, and these are: it permits the research investigator to forecast into the future; it enriches research procedure in a methodical way; it endows the research with illustrative power; and allows for testing and improvement of the theoretical framework. This chapter discusses Ajzen's (1980) TRA, Davis' (1986) TAM, as well as Rogers' (1962) theory on Diffusion of Innovation (DOI).The study is anchored on these three theories. TAM is used in envisaging and clarifying

attitudes and behaviors in relation to users' adoption of technology. The theory also provides a foundation for elucidating the impact of beliefs and intentions of using a technological phenomenon, thereby measuring perceived ease of use (PEOU), and perceived usefulness (PU) of e-information resources. TRA forecasts behavior in various situations, and forms the theoretical foundation for research related to attitude-behavior affairs. In addition, it is applied as a hypothetical foundation for postulating causal connections between PU, PEOU, in addition to behavioral and attitudinal intentions. DOI is applicable in explaining information systems research, and is widely used in the area of technological diffusion and adoption in educational settings. The theory comprises of five (5) phases namely diffusion (or communication), discovery, through the socio-economic strata, as well as considerations of time and its values. However, the available theoretical foundation justifying the paradigmatic direction, with empirical validation, allowed this study to formulate the hypotheses on ICT proficiency and experience (see chapter 1.8: Research Hypotheses). The core argument of this chapter is that some theories support the utilization of e-resources, in which TAM, TRA and DOI were adopted for this study. These theories are guided with the study objectives, as they try to expound the adoption and utilization of e-information resources by the undergraduate respondents, which are: (1) to ascertain how the respondents (i.e. the undergraduate students) in the selected HEIs in the Eastern Cape access e-information resources. (2.) To determine the influence levels of ICT literacy skills on the utilization of e-information resources by the undergraduate respondents in the selected HEIs.

(3.) To determine the frequency and problems faced in the actual utilization of e-information resources by the undergraduate respondents in the selected HEIs. (4.) To ascertain the contributions of demographic factors on the exploitation of e-information resources by the undergraduate respondents in the selected HEIs. (5.) To examine the perceptions and attitudes of undergraduate students towards e-resource utilization. The review of this chapter revealed that there are some electronic resources provided by the universities, but despite this provision, many of the students are under-utilizing the resources based on their beliefs on PEOU and PU, which states that the utilization of the system affects a person's behavioral intention (BI) in their utilization of the system. The present study therefore adds to existing knowledge of the germaness of electronic resource utilization among the undergraduate respondents. In a bid to accomplish this feat, it is essential to conceptualize the theoretical framework so as to throw more light on the main argument of this study, in addition it also evaluates other empirical literature that relate to this research. At this juncture, it is essential to discuss the benefits of using theoretical frameworks in this study.

2.2 IMPORTANCE OF APLLYING THEORETICAL FRAMEWORKS

The application of a theoretical framework provides scholars with several advantages. Firstly, (Caliendo, 1996), posited that scholars have the of their investigation to be recognized as "excellent research" by the larger society, and this is based on the premise

that it provides a clearer viewpoint regarding the research direction and the essential assumptions that affects the design of the study. Conceptualizing a theory, as epitomized by Miles, (1994) provides substantiation that a researcher has appraised and revised relevant studies, adopted pertinent models, and structured these theories into a concept which depicts the limits of this research, thereby presenting the main research elements of this study and the presumed correlations that exists among them. Also, Caliendo (1996) emphasizes the specific usage of frameworks and the structural underpinnings that is conferred on research that differentiates academic undertakings from other endeavors. Secondly, Mertens, (2005) opined that the use of a framework proposes that investigators comprehend what they are studying. (Thirdly, where a framework is adopted, researchers would approach the research with certain fundamental expectations arising from their theoretical inclination (Mertens, 2005).
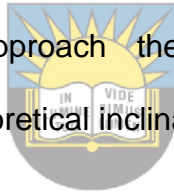
The investigators' fundamental expectations will dictate every phase in the course of the research design, thereby offering structural and scientific interpretation to the design. Mertens, (2005) expects that the primary expectations will affect the research questions, the selection of the adopted strategies adopted in the course of collecting data which in turn provides answers to the research questions and, eventually, the analysis and consequent explanation of the research results, no wonder why Cohen, (2000) states that the adoption of frameworks which are founded on verified empirical and sound methodologies, postulates, and hypotheses which provides for the substantiation of facts. Some scholars discussed that several evidences can form the reasons to which research results can be associated when the new data is construed (Cohen, 2000). Researchers

adopt frameworks comprising of linked philosophies, postulations and notions, often emanates from existing studies, in a bid to offer a structure for reference when conducting surveys. These fundamental structures are epitomized as 'theoretical' or 'conceptual' frameworks. Also, scholars (such as Leshem, 2007) use the terms interchangeably. Maxwell (2005) outlines framework as expectations, assumptions, beliefs, and models that guides and informs your research goals. With these benefits of the theories adopted for this study, some empirical studies also illustrate the correlation between the theories and ICT literacy skills. From the research catalogues on ICT literacy skills, several theorists (such as Alharbi, 2014) have been propounded in a bid to decipher the correlation amongst the determining factors of technology acceptance. Studies on the adoption of technology and its utilization is a frequently evolving field, on account of developing technologies on a recurrent basis (Al-Qeisi, 2009). Numerous technology adoption utilization models and theoretical underpinnings have been employed in the course of describing users' acceptance of technology (Venkatesh, 2003; Saade, 2007; Al-Shafi 2009; Suhendra, 2009; Oye, 2014). With respect to Rasimah, (2011) and Al-Quesi's (2009) postulations, these models have their origins in the disciplines of sociology, psychology, IT and IS research, etc. The theories adopted for this study include: Ajzen's (1980) TRA, Davis' (1986) TAM, as well as Rogers' (1962) theory on Diffusion of Innovation (DOI). Investigative studies by these scholars have engendered numerous adoption standards that can be utilized when assessing the effective execution of ICT, e-learning programmes" (Evans, 2014) as well as electronic resource use among academics in HEIs. Chau, (1999) epitomized technology acceptance as "an individual's psychological state with regard to his or her voluntary or intended use of a particular

technology". In addition, other scholars like Tao (2008) added that the successful implementation of electronic information is totally hinged on user acceptance of the innovation or technology. Okello-Obura, (2010) posited that a user's attitude towards the accessibility to e-information resources is influenced by the insufficiency of ICT platforms and connectivity to the internet, and as put differently by Oulanov's (2008) proposition, usability evaluations offer an effective technique for assessing the efficiency of systems and satisfaction of users.

Different theorists (such as (Taylor 1995; Chau, 1999; Hu, 1999, Kowitlawakul, 2011) have utilized TAM and TRA models to expound BI and to foresee user adoption of technology. TAM has nevertheless evolved as a major influential model that has been utilized to elucidate the technological acceptance of systems in more preferable ways than TRA; (Taylor 1995; Malhotra 1999). (Sahin, 2008) depicted that TAM offers a foundation for elucidating attitudinal impacts and intentions in the course of utilizing technological applications). Also, the policy involvements that emanate from this theory are reasonably straightforward. Also, a merit of these theories, is that they seek to ensure user-friendliness to sufficient information to make informed choices, (as also expected from policy formulations). Despite the fact that the theories are mostly used and appropriate in studies of acceptance and ICT use, (Sheikhshoaei, 2011) posited that, it has its criticisms as discussed in chapter 2.6 below. The theories adopted for this study are detailed below.

2.3 TECHNOLOGY ACCEPTANCE MODEL (TAM)

Lee, (2003) opined that TAM is the most frequently and generally adopted model applied in the depiction of a user's information systems adoption. This is the reason why numerous academics center their research on TAM. According to Devaraj, Fan and Kohli, (2002), this indicates that while TAM serves as the reference platform for most studies on technological acceptance, the theory emphasizes on attitudinal underpinnings of users intentional behaviors to utilize a specific service or technology. As put forward by Davis (1989), and Venkatesh, (2003), TAM's suitability in studying the correlation between information technology usage and users behavior on technology, recognizes the determinants involved in the course of accepting and adopting technological innovations. Therefore, the reformation of TAM was conducted by Davis, in 1989. As put forward by Agarwal (1999), TAM is highly appreciated in academic climes on account of its broad acceptability and use among scholars of information systems. This theory clearly elucidates the acceptance of electronic resources by the undergraduate students, as well as the empirical research results, and thus, enhances the building capacity of the respondents in ICT literacy development. Further, this theory also benefits the respondents in terms of the demographic factors (such as age and gender). As regards age, within the age bracket of 21 and 30 years old respondents are the category of respondents that readily accept the electronic resources, while the male respondents readily accept the electronic resources than their female counterparts. Venkatesh, (2003) elucidates that the emphasis of TAM on individual's technological acceptance utilizes intention or usage as a dependent factor. TAM is therefore fashioned to clarify an entire behavior, impression or condition in such a way that it would consequentially be able to

forecast human behavior, thereby improving its acceptability as regards information system usage as discussed by Mathieson, (2001).

It has been discovered by Roberts and Henderson (2000) that TAM has been successfully applied in several sectors such as HEIs, business environment as well as government agencies, for instance, TAM is applied to investigate the experience of government workers in their ICT infrastructure utilization. They endeavored to unravel the rational influence of attitudinal behavior and the consequential acceptance of users' behavior towards Information Technology in the workplace. In the same vein, Vijayasarathy (2004) applied TAM in the explanation of consumer intention to utilize online shopping. A germane determining factor of attitudinal intentions is the concept of perceived usefulness due to the fact that perceived ease of use couldn't perform this function. Further, in Tao's (2008) illustration, he posited that there was an important development regarding the exploitation of e-information resources, thereby questioning the choice and utilization of users of an e-information resource, he discovered that PU played a germane role in the determination of students' intentions regarding electronic resources use. It has been studied that TAM, which is takes its origin and theoretical foundation from the TRA model, Lu, (2003) postulates that behavior is a function of attitudes, beliefs and intentions. TAM (as epitomized by Davis, 1989, Kripanont, 2007) makes the assumption that the utilization of a specific innovation or technology is voluntary and that when an individuals imbibe the intention to perform a task, they will exercise freedom in their action without restriction.

Inspite of all these merits, some demerits exist in literature on the application of the theory. For instance Segars (1993) re-evaluated the duplication of the Davis study. They were

skeptical of the research instrument used, and revealed a different theory based on three concepts, and these are usefulness, ease-of-use and effectiveness. These findings have not yet been reproduced. Nonetheless, some features of these research speculations were buttressed and revised by Workman in the year 2007, when he distinguished the technology use against dependent variable into information use. The updated theory, which is denoted to as TAM^2, was empirically validated both in mandatory and voluntary situations. The results greatly conform to TAM^2 (as disclosed by Venkatesh, 2000). This theory depicts the factors that determine user's attitudinal behavior regarding the adoption (or otherwise) of a particular innovation or technology which include PEOU and PU, hence , lending itself to all library and information science studies and even across the discipline of librarianship that concerns e-library skills and e-information-resources. The benefit of using e-resources and digital technology by information professionals as well as its user- friendliness provides an understanding that will develop their interest in the resource, and concomitantly through regular utilization of the resources without efforts. TAM is a parsimonious but robust theory and it is beneficial in the explanation of specific information technology or system. So, lots of research have been postulated regarding the extensions of models for revising TAM. For instance, Taylor (1995) amalgamated the TAM-TPB, which is a combined model of TPB and TAM. The suggestion of TAM2 as an update of TAM was conceived by Venkatesh, (2000; 2003), by recommending UTUAT, which is the Unified Theory of Acceptance and Use of Technology. In likewise manner, a proposal for the integration of Task-Technology Fit and TAM, then called TRAM was developed by Lin, (2007). Till date, several scholars have revised the theory by incorporating new variables centered on TAM. For instance,

Agarwal, (1998) incorporated the concept of compatibility in TAM. Dishaw (1999) incorporated TAM with Task-technology Fit. Agarwal, (2000) infused cognitive absorption, and self-efficacy based on TAM. Venkatesh, (2000) added TAM with subjective norms. Chau, (2002) combined Technology Acceptance Model with peer Influence. Chiu, (2005) unified TAM with personal innovativeness. Gefen, (2003) added the construct named trust with TAM. Walczuch, (2007) incorporated TAM with technology readiness. Chen,(2009) amalgamated the importance of TAM with technology readiness, so as to present an incorporated theory for conceptualizing users' utilization of self-service technologies. It has been revealed by the aforementioned scholars of TAM's wide acceptability by users regarding technology adoption with reference to their attitudinal development.

2.4 THEORY OF REASONED ACTION (TRA)

Malhotra (1999) opined that applications of TRA is commonly expedited in studies relating to social psychology and involves the determination of intentional behavior. This behavioral model and theory was first crystallized in 1980 by Ajzen and Fishbein. On the other hand, Kripanont (2007) is of the opinion that TRA provides a formidable platform on studies related to relationships on attitudinal behavior. This theory has also been appraised by Shih (2011) as an excellent predictor of behavior in numerous settings. Giving credence to the TRA model, "an individual's performance of a specified behavior is influenced by his or her behavioral intention (BI) to perform the behavior, and BI is mutually affected by the individual's subjective norm (SN) and attitude (A) regarding the behavior in question" (Malhotra, 1999). Put differently, beliefs determine attitudes, which,

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consequentially modifies intentions, and dictates behavior (Chau, 2001). Also, Chen, (2012) affirmed that this model therefore depicts that subject norm and attitudes are the major reasons for a person's behavior. The theory has been used in various sub-disciplines, such as education, information services and technology so as to comprehend human behavior, due to the fact that the model usually attempts to illustrate a particular set of occurrences (Case, 2012). The first part of the illustration suits this research. Thus, the attitude emanating from the students' opinions, beliefs, ideas and feelings, is the core explanation for interest in the utilization of the electronic resources in the tertiary institutions. TRA consists of three general concepts: Attitude (A), Behavioral intention (BI) and Subjective norm (SN). TRA proposes that an individual's behavioral intention is hinged on the individual's behavioral attitude on subjective norm and behavior. BI assesses a person's relative intentional strength to expedite a behavior. Put differently, an individual's voluntary or volitional behavior is determined by the person's attitude regarding behavior and the opinion of that person on the view of other people when behavior is performed. Fishbein (1975) stated that a person's perception, joined with subjective norms, results in behavioral intention, for instance, the attitude of undergraduate students towards electronic resource utilization, in combination with the subjective norms about databases, result in students intention of avoidance or non-avoidance of databases use, which will consequently result in actual behavior. BI serves as a determinant for both behavioral attitudes and subjective norms regarding behavior, which has been discovered to predict actual behavior. For the purpose of this research, self-efficacy denotes the evaluation of a student's competences regarding e-resource utilization. In another premise, Facilitating conditions (FC), centers on evaluating the

facilitating conditions for utilizing e-resources, including three essential resources namely geographical location, infrastructure, and internet access (Lin, 2007). Hartshorne (2009)opined that the compatibility in the exploitation of electronc materials by te student respondents are projected to determine behavioral intentions.

The applicability of the TRA model to this study cannot be over-emphasized, due to the fact that it is believed that if a user accepts e-resources utilization, then there would be higher tendencies for the users to adopt the innovation. Nevertheless, if they believe that their exploitation of digital information resources will not be beneficial to their academic pursuits and other areas of their daily lives, then there is a lower probability of them utilizing the innovation or technology. In the same vein, attitudinal perceptions reassures students that e-resources offer suitable, faster and up to date methods of information retrieval. This correlation depicts the importance for students' accessibility and utilization of e- resources as disparate to utilizing print resources. Shih, (2004) stated that this perception plays a major significance in the determination of the student's opinion. In subsequent research efforts, TRA has further evolved, and this has consequentially resulted in the birth of the TPB, which is also referred to as an extension of TRA. Another importance of this theory to this study is that it enhances the knowledge and conceptualization of the influence of human behavior on behavioral intentions to utilize (or otherwise) e-information materials, that are also determined by independent norms, observed behavioral attitudes and control. For this research, the observed behavioral control is defined as knowledge on the navigation of the e-information databases in addition to exploring e- information resources through their ICT skills (Shih, 2004). Also,

subjective norms are referred to as students' opinions pertaining the utilization of e-information resources by the perceptions of user groups (i.e. lecturers or friends). The observed behavioral control depicts students' attitudes on the existence of intellectual underpinnings, resources and prospects which are vital for the utilization of e-information resources (as observed by Lin, 2007). This model clearly defines the attitudes and beliefs of the undergraduate respondents on their utilization of the e-information resources, and this would also help to harness knowledge of the respondents regarding ICT literacy. Furthermore, this theory helps the respondents in conjunction to demographic factors, (i.e. age and gender). The findings of this research reveals that respondents within the age bracket of 21 and 30 years old are the category of respondents that have the greatest belief in the use electronic resources, while the male respondents believe in the adoption of digital resources than their female counterparts.
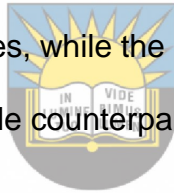
2.5 THE INNOVATION DIFFUSION THEORY

The DOI theory was first conceptualized in 1962 by Rogers and proposed by Moore (1991). Gabriel Tarde, the French sociologist developed the initial S-shaped diffusion curve that was initiated in 1903 (Toews, 2003), and afterwards, Ryan, (1943) who developed the adopter groupings that were utilized in the current model was propounded by Everett Rogers. The DOI model, though derivable from the discipline of sociology, has been widely applied in numerous disciplines such as public health, information technologies, history, political science, communications, economics, medicine, and agriculture (Stuart, 2000). DOI was also commended by Katz, (1957) who was also

credited on account of presenting the assertion of opinion leaders, opinion followers and the interactions and roles of e-resource in influencing these two groups. The DOI theory is often referred to as a well- valued change theory for managing innovations and technology, where the innovation is reviewed so as to cater for the needs across all strata of technology adopters. Diffusion is defined as the communication of innovation via certain means over protracted time among the affiliates of a social system". An innovation refers to a practice, idea, or phenomenon that is observed to be new by a person or other components of adoption". When users create and diffuse information with one anotherto reach consensual agreement, this is referred to as communication (Rogers, 1995). It also reiterates the usefulness of peer networking and communication within the adoption process. The DOI model illustrates the adoption pattern, defines for the prediction of a new innovation (such as IT) will be effective. Adoption requires the "full use of an innovation as the main course of available action" (Rogers, 1983). The DOI theory is a broadly applied theory in fields of adoption and diffusion of technology. Generally, farmers initially conducted studies on attributes of innovation research and their levels of adoption (Rogers, 2003). Previous studies conform to the application of Rogers' DOI theory for examining the technology adoption in educational sectors (VanLeeuwen, 2000; Medlin, 2001). In conformity with this assertion, the DOI theory is viewed as a valued tool for instructional developers and educational technologists, thus developing e-resources use in educational climes.

The DOI theory epitomizes the procedure that arises when people embrace a new phenomenon, invention, philosophy, practice, etc. Rogers navigated this process,

stressing that in usual circumstances, a few people initially adopt the new idea and its use. As these early adopters diffuse the innovation, more people become aware and tend to embrace it, which leads to the advancement of the innovative idea. Another viewpoint reflects adoption as a system of events a person embarks upon over protracted time, which are severally based on conceptual, intellectual, and emotional considerations (Straub, 2009). Also, Beal and Bohlen; Weber, (2011) classifies adoption process into five phases namely evaluation, awareness, interest, trial, as well as adoption. DOI model proposes that the adoption of users to innovation is affected by perception (Plouffe, 2001). This therefore reveals that students and members of the academia are known to either adopt or disregard an innovation on account of their formed beliefs about the innovation (Agarwal, 2000). Over time, an innovative product or idea spreads until the innovation has fully permeated within the population. According to Rogers, there are five classes of adopters of an innovation, namely: early adopters, innovators, early majority, late majority, and laggards, and sometimes, the class of non-adopters forms a sixth group, which is required. These five categories are explained in the bell-shaped curve image below. Rogers appraised the values underpinning each category, as these are very synonymous to the magnitudes and quantities of a normal bell-curve.
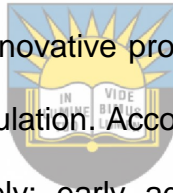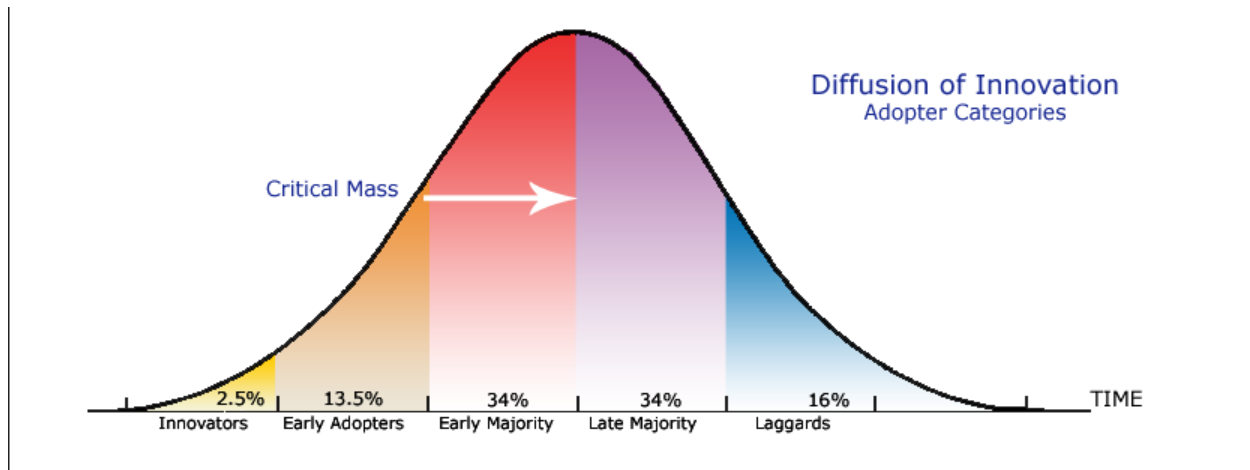
Figure 2 .1   Diagram Illustrating Diffusion of Innovation Theory (Source: Rogers, 1983)

Research on diffusion hinges on conditionalities which intensifies or diminishes the probability that a fresh product, idea, or practice will be embraced by users with common homogenous traits. DOI theory examines the fact that interpersonal contacts as well as media offer information and determine opinion and judgment. In his study of the occurrence of innovation, Rogers' (1995) postulation stressed that it comprises of four phases: invention, information diffusion (otherwise referred to as communication) via the social system, time and its consequences. The information is disseminated via networks and linkages. The importance of networks and the impact of opinion moulders influences the likelihood of innovation adoption. Research on Innovation diffusion has endeavoured to describe the elements that determine reasons why users are adopters of a new information phenomenon, such as e-resources. Attitude leaders wield influence on audience behaviour via their individual contact, but other intermediaries who are gatekeepers and agents of change are also involved in the diffusion procedure. The five categories of innovation align a typical deviation-curve, very few pacesetters adopt and

accept the innovation initially (2,5%), initial adopters account for roughly 13.5%, and in no distant time thereafter, the early majority and late majority account for about 34% respectively, while the laggards lastly account for 16%.

The applicability of DOI theory in IT acceptance, adoption, and use forms the theoretical basis for IS research. In elucidating adoption further in IS research, Suebsin (2009) describes adoption as "the initial acceptance or utilization of a new product or technology". Also, in the submission of Olasina, (2014), he confirms that the DOI adopts multi- or mixed methodologies for evaluating the likelihood of technology diffusion and other several factors known to either improve or impede the acceptance and adoption of technology. Due to the fact that decisions are neither collective nor imposing, academics make decisions to utilize e-resources based on the five underlisted phases as recommended by Rogers (1995) namely: the pursuit of knowledge, confirmation, persuasion, decision, and implementation. The description of the stages incorporates:

1) Knowledge: awareness of an individual's innovation and the functionality of its idea. 2) Persuasion: Individual develops a satisfactory or unsatisfactory attitude as regards innovation. 3) Decision: Individual involves in activities that culminates in a choice of adoption or rejection of innovation. 4) Implementation: Individual's utilization of an innovation. 5) Confirmation: Individual assesses innovation-decision results that have already been discovered.

The DOI theory clarifies adoption of technology from the personal human perspective levels and not from the social group levels. The importance of the DOI theory in relation

to this study is premised on the revelation that adoption and the utilization of e- resources is the concern of the individual, and this directly correlates to the researcher's fifth research question which reads thus: "What are the attitudes and perceptions of undergraduate students towards the use of e-resources?" Koçak, (2013) postulates that within the Rogers' DOI model, technology adoption and extensive use is associated with five factors known as perceived characteristics of innovation or attributes of innovation. From the perspective of Çakmak, (2013), a conceptualization of the innovation attributes will result in efficient and effective e-resources use, and these are observability, complexity, trialability, compatibility and relative advantage.

According to Utomo (2001); Al-Gahtani, (2003), DOI has also been utilized in computer technology adoption studies in less developed economies among Information System professionals (Bajaj, 2000), as well as in adopting values of web service (Chen, 2003). Other scholars (such as Teo, 2003), have posited the correlation between internet adoption levels and competitive advantage the role of IT adoption change agents (Elsammani, 2003) and general diffusion patterns of IT (Teng, 2002).

According to Ntemana, (2012), the utilization of DOI evaluated and assessed the impact of the five elements of DOI theory on academic e-resource and instructional communication. Their research outcomes disclosed that complexity, observability, and relative advantage, and have a positive impact on their beliefs towards their academic utilization of e-resources, with observability recording the greatest effect. They are of the opinion that university administrators should organize appropriate programmes for

training the respondents and deployment of user-friendly e-resources into the HEIs. In the same vein, Martins, (2004) in Brazil found observability and trialability as the two most significant predictors regarding their utilization of the e-information resources as an instructional mechanism. A clarification of the discrepancies on technology adoption influencing factors and use by various scholars such as Ntemana, (2012); Rogers, (2003) has been credited to numerous interconnected elements, such as the individual, innovation, and environment, social system, communication channels, and time.

This theory would provide meaning to the adoption and communication of the undergraduate students on ICT literacy skills which will enhance their utilization of e-information resources as suggested in this thesis. Also, this theory improves the adoption of respondents in relation to their demographic factors (e.g. Age and gender). As regards findings on age from this study, respondents who fall within the bracket of 21 and 30 years of age are better adopters of electronic resources use, while the male respondents are better adopters and communicators of electronic resources use than their female counterparts. This theory has been exemplified and applied as a platform for verification of theoretical research frameworks in information systems. From the explanation of all the models, the key elements and their theoretical applications are hereby depicted below.

Table 2.1: Key elements of the theories and their theoretical applications

S/N	MODEL	KEY ELEMENT	THEORETICAL APPLICATION
1.	TAM	Acceptance of technology	Acceptance of technology on the utilization of electronic resources which is aligned with ICT literacy capabilities and demographic factors (e.g. age and gender) of the respondents
2.	TRA	Belief in the adoption of technology	Belief in the adoption of technology on the utilization of e-information resources which is aligned with ICT literacy capabilities of the undergraduate respondents.
3.	DOI	Awareness of technology	Awareness and adoption of technology on the utilization of e-information resources which is aligned with ICT literacy capabilities and demographic

			factors (e.g. age and gender) of the respondents

2.6 CRITICISMS ON THE THEORETICAL FRAMEWORK

Several scholars (such as Ma, 2005) in their appraisal of literature on utilization of computer technology, suggested that "evolving factors might not be important over time (e.g. attitude) and evolving factors might not be reliable in result significance (e.g. subjective norm)". These apprehensions raised are bothersome as they indicated the delimitations in the theories, which, consequentially could diminish the predictive capabilities of the theory. As noted by Mathieson, (2001), TAM is limited in taking into consideration the elements that are essential forecasters of technology utilization. In the same vein, Malhotra (1999), criticized the initial Davis' (1989) TAM theory. They perceived that the model had psychometric and theoretical challenges. Scholars such as Davis (1989) and others expunged the concept of attitude from the operational TAM model due to the fact that they discovered its weakness regarding in intervening perception influence on attitudinal intention (as postulated by Davis, 1989). Also, (Ghazizadeh, 2012), stated that the initial TAM did not integrate the impact of control and social factors, which is attributable to the fact that their research centered primarily on e-resources use. However, inspite of the varied attitude towards e- resources use as defined in TRA and TAM,(Porter, 2006), both models have strong elements of behavior elements, and is of the postulation that as individuals form an intention to perform a task,

they exercise freedom actions without inhibition. In the global world there will be many restraints, such as restricted freedom in their performance of tasks (Bagozzi, 1992), who thereafter opined thus.

"Elements of uncertainty are predominantly experienced in the minds of decision makers with regards to their fruitful adoption. This is consequential to the complexities of new technologies such as personal computers (PCs), as people exhibit intentions and attitudes towards trying to learn towards the use of new technology prior to originating efforts directed at utilizing them. Attitudes towards intentions and utilization may be lacking in conviction or ill-formed or may occur only after preliminary strivings to learn to use the technology evolve. Thus, actual usage may not be directly or consequentially influenced by such intentions and attitudes"

Though accustomed and widely applied, balanced choice models which provided a critique, which is based on various arguments and claims. It is an established statement of fact that human attitudinal behavior is very complex and comprises of social, moral, and humane behavior in addition to self- interested ones. At often times, behavior is deeply rooted in collective, social and other decision -making contexts. Therefore, in conformity to this research for instance, proficient respondents in ICT literacy develop affective relationships with their electronic resources.

Despite all the aforementioned criticisms, the appropriateness of the models for adoption in this research, (which involve the awareness, adoption, belief and acceptance of technology, cannot be questioned). Further on TAM, Venkatesh, (2007) recommended

that restraint must be exercised regarding the critiques of DOI, TAM, and TRA are also vital areas of strength, such as ease, parsimony and simplicity. Without the afformentioned models, the findings of the study would not be solvable, as these models proffer a guide to the reduction of under-usage of digital materials among the study population, and this leads to ICT literacy development of the respondents. Also, the application of these theories can solve the anomaly as regards the demographic factors of this study.

Table 2.2: Tabular Design Illustrating the Mapping of key study objectives & aligning of questions to the major elements of the research framework

S/N	OBJECTIVE	QUESTION	QUESTION	KEY VARIABLE
1.	To ascertain how undergraduate students in selected universities in the Eastern Cape access e-resources	TAM/ DOI	How do undergraduate students in selected universities in the Eastern Cape access e-resources.	Acceptance, Beliefs, adoption, perceived usefulness and perceived ease of use on behavioural intentions.

2.	To determine the level of influence of ICT literacy skills on the utilization of electronic resources by Undergraduate students in the selected universities.	TAM, TRA and DOI	What is the level of influence of ICT literacy skills on the utilization of e-information resources by Undergraduate students in the selected universities?	Beliefs and behavioural intentions, adoption, Perceived ease of use and perceived usefulness
3.	To determine the frequency and problems encountered in the adoption of electronic resources by Undergraduate students in the selected universities.	TAM, DOI	What is the frequency and problems faced in the exploitation and utilization of e-information resources by Undergraduate students in the selected universities?	Acceptance, Beliefs and behavioural intentions, adoption, perceived usefulness and perceived ease of use on.

4.	To ascertain the contributions of demographic factors on the use of electronic resources by Undergraduate students in the selected universities.	TAM, DOI	What is the contribution of demographic factors on the use of electronic resources by Undergraduate students in the selected universities?	Acceptance, Beliefs, adoption, perceived usefulness and perceived ease of use on behavioral intentions
5.	To determine the attitudes and perceptions of undergraduate students towards the utilization of e-information resources	TAM, DOI & TRA	What are the attitudes and perceptions of undergraduate students towards the utilization of e-information resources	Acceptance, behavioral intention, beliefs, innovation, adoption

Kanat, (2009) explained that an evaluation of these theories reveals that similar concepts can be illustrated in these models, particularly the concepts of functionality and usability and However, this study reflects on the variables used in TAM, TRA and DOI as it has been broadly and effectively utilized in various settings to describe determining factors of user behavior and their intention to utilize a technological resource or new system.

2.7 CONCLUSION

Chapter two reviewed the awareness, adoption, beliefs and acceptance of technology, as exemplified in the three models used in this study, namely TAM, TRA and DOI, and this revealed the total findings of this study that ICT literacy skills and demographic factors of the respondents are not fully aware, believe in, nor fully accept the utilization of e-information resources, hence, the reason for the under-utility of the resource. This assertion is aligned with the core argument of this chapter which states that the utilization of e-information resources among undergraduate respondents can be predicted with the application of the theoretical framework adopted for this study. The models discussed are TAM, TRA and DOI. The study was largely informed by the TAM and was complemented by TRA and DOI. The above-mentioned models were discussed as well as their research demerits in relation to e-resources use were clearly elucidated. The benefits of using theoretical framework for this study ensured the provision of indication that the investigator reviewed relevant literature, and structured them within the confines of the present study and presented the key factors or variables as well as the correlations among them. The theories discussed include TAM, which centered on the attitudinal

description of attitudinal intention to utilize a definite technology, innovation, or service due to the fact that it serves as the starting point for most studies on end-user technology acceptance, while TRA investigates an individual's performance of an identified behavior, which is premised on the users' behavioral intention (BI) to carry out a task, and BI is mutually affected by the person or users' subjective norm (SN) and attitude (A) regarding the behavior in question" (Malhotra,1999). Further, DOI is an innovation of a practice, idea, or phenomenon that is observed to be newly innovated by a person or other components of adoption". When users' produce, generate and disseminate information with one another to reach a joint understanding, this is referred to as communication (Rogers, 1995). It also reiterates the usefulness of peer networking and communication within the adoption process. From the theories, there are two tables presented, which are derived namely Tables 2.1 and 2.2. In addition, the TAM theory was criticized by scholars, stating that it had a weakness in intervening beliefs, and that is why TRA supported this criticism, which stated that the beliefs and attitudes of the users influence the utilization of the electronic resources, moreso, DOI expatiated more on the adoption of technology, thus, this does not affect its applicability in the course of this research due to the fact that the three theories enhance the development of electronic resources among users. The main crux regarding this chapter was to critically assess existing knowledge of the phenomenon of the study, to articulate the theoretical assumptions of the study and to highlight the key constructs of the study. These attributes or constructs have largely informed discussion in the subsequent chapter (i.e. chapter 3), which is the appraisal of literature, and is based on variables gleaned from the theoretical models and research questions. Studies have shown that the theories are effective when studying the

awareness and adoption on the use of technology. The study also examined attitude, perception, beliefs, intention, attitudinal behaviors, perceived ease of use (PEOU), expectations, perceived usefulness (PU), and satisfaction in the utilization of e-information resources.

CHAPTER THREE

3.1 INTRODUCTION

Chapter three concentrates on the existence of relevant empirical studies that relate to the discussion on ICT literacy skills and demographic factors as determinants of e-information resources use among undergraduate respondents in selected HEIs in South Africa. The aim of this study focused on how ICT literacy skills and demographic factors determine electronic resource use amongst UFH and RU undergraduate students. The study addressed the following study objectives: (1) to ascertain how the respondents (i.e. the undergraduate students) in the selected HEIs in the Eastern Cape access e-information resources. (2.) To determine the influence levels of ICT literacy skills on the utilization of e-information resources by the undergraduate respondents in the selected HEIs. (3.) To determine the frequency and problems encountered in the utilization of e-information resources by the undergraduate respondents in the selected HEIs. (4.) To ascertain the contributions of demographic factors on the exploitation of e-information resources by the undergraduate respondents in the selected HEIs. (5.) To examine the perceptions and attitudes of undergraduate students towards e-resource utilization. The commencement of this chapter outlines the research efforts of other researchers who have investigated the information resources among users. Some of the consulted sources of the literature were derived from journal articles, books and online databases, journals,

and key computerized databanks, i.e. AJOL,ERIC,JSTOR, TEEAL, LanTEEAL, E-journals and E-books and Google Scholar, etc. The core argument of this study is that ICT literacy skills and demographic factors influence the under-utilization of the electronic resources among the undergraduate students. It has been revealed that other scholars who have researched on related studies support the main argument of this research. On account of this, the theories adopted enhanced the overall assessment, research findings and charted the research direction for this study, with the three theories sharing the same assumption on the utilization of electronic resources. Most theorists' however have shared a common assumption on ICT literacy skills and demographic factors. The incorporation and applicability of the three theories however, have broadened knowledge and enlighten users, due to the fact that it became an eye opener regarding the awareness, acceptance and adoption of technology. It has been revealed that TAM and DOI postulates that when users accept a technology, they can easily adopt and utilize the resources. For instance, the attitude of undergraduate students towards electronic resource utilization, in combination with the subjective norms about e-resources, will concomitantly lead to students intention to avoid (or otherwise) the use of electronic resources, which will consequently have actual behavior as its end result. This assertion also supports the TRA theory that relates to self-efficacy, which refers to the self-assessment of a student's capabilities to use electronic resources. In addition to the aforementioned discussion, this study culminates on ICT literacy skills and its effects on the utilization of respondents to e- information from different locations and the determinants of the respondents' demographic factors, which are key components in this research, and concludes with an appraisal on the perception of respondents to e-

information resources utilization, as buttressed by by Rajagopal's (2012) postulation on users' attitudinal behaviors, intentions and methods on digital resources and service delivery in HEIs revealed that there are developing concerns regarding digital information infrastructure among the engineering student populations at Pondicherry University. It is on this premise that perception was also discussed in this study. The perception of respondents as regards e-resource use reveals the preference of electronic format to printed versions, for instance, Liew (2000), posited that the reading of e-journals is differs significantly from perusing printed versions, many have begun to ascertain the likelihood that electronic documents offer users advanced functionality characteristics further than what is obtainable in printed format. In light of doing justice to this chapter, the germane literatureon ICT literacy skills and demographic factors are hereby discussed below.

3.2 EASE OF ACCESS AND USAGE OF E- INFORMATION RESOURCES AMONGST UNDERGRADUATE RESPONDENTS: CASES OF UNIVERSITIES OF FORT HARE AND RHODES

According to Toner, (2008) higher education is rapidly changing over time. Also, Bennet (2003) recognizes two main modifications in academia. First, HEIs are rapidly deviating from teaching to a learning enterprise. Secondly, revolutions in IT development and the delivery of education. Every academic establishment should recognize the two shifts (as mentioned above) in the development of their programme and curricula. This study reflects on this development in higher education institutions with focus on ICT literacy skills and demographic factors as determinants of e- resources use among

undergraduate respondents in Eastern Cape HEIs, namely University of Fort Hare and Rhodes University, South Africa. It concludes that ICT literacy skills and demographic factors determine electronic resources use among the selected respondents. It is on this note that relevant literature related to this assertion are hereby defined below.

The AACR2 (2002) described an e-resource as any electronic task programmed and accessible for use in a computerized environment. It also incorporates electronic data which is accessed through direct and remote means (i.e. fixed data). Put differently, e-information resources depicts electronic resources utilization through computer networks and systems. The e-information resources usage via carriers (such as discs, cartridges, etc.) designed to be implanted into a computer device or its supporting machinery is termed as direct access e- resources. Crum (2008) opined that electronic resources management such as e-journals follows a fairly reliable pattern in most libraries, which is well documented in existing e-information resources literature.

Digital resources refer to the electronic presentation of information, which are obtainable in numerous formats such as online journal magazines, electronic learning tutors, electronic books, digital libraries, and online tests. On account of the efficient performance, e-information resources have become essential sources of information, such as collections of images, electronic journals, multimedia in CD format, internet, tape, worldwide web technology, etc. Further, e-journals, e-news, e-discussions, archival resources of data, electronic mail, online chatting, etc. can all be termed as e-resources. According to Thanuskodi, (2012), e-information sources typifies a broad array of e-

products ranging from CD-ROMs to digital periodical materials, from databases to mailing list, with common characteristics of being modified or utilized by a computer.

The scholarly efforts of researchers such as Bavakenthy, (2003) exemplified the conceptualization of e-information resources, noting that, e-resources are electronic sources of information, and it is a wide-ranging terminology that incorporates various models of publishing, such as e-mail publishing, e-journals, web and internet resources, Print-On-Demand (POD) materials, CD-ROMs, OPACs, online databases, e- books, wireless publishing, etc. In this domain, e-resources principally connotes any electronic product that provides data collection whether in graphical, numeric, textual, or time based formats, and is available in commercial quantities (Bavakenthy, 2003In reference to the International Federation of Library Associations (IFLA, 2015), e-information-resources comprises of computer-managed resources that that depend on the use of an exterior resource (such as CD-ROM player) connected to a computer. Also, Haridasan, (2009) elucidated that E-resources exist in two classes namely programmes (guidelines or procedures for executing certain tasks such as data programming and processing (e.g. interactive multimedia, online services,) and data (information presented as graphics, letters, images, numbers, and sound or a combination of all.

As discussed by Graham (2003) the storehouse of information that are discovered through sophisticated, remodeled and modernized ICT facilities, more often stored in the computer-generated space in the most tangible and compacted formats and are made available and accessible concurrently from vast sources. The phrase 'electronic resources', has been generally conceptualized as, the accessibility to information in a computerized environments and may be beneficial as potential sources to bibliographic

guides, but they irregularly visualized as quoted references in their own right. Therefore, Swain, (2009) stated that files in electronic arrangements that are accessible to the resource users via a computer based data recovery mechanism is referred to as E-resources. However, it has recently been discovered that e-resources have become indispensable, as they provide timely, directional, multi- dimensional and up-to-date information which can be ubiquitously utilized across geographical frontiers, thereby contributing significant development to all facets of human endeavor.

E-information resources are those resources that necessitate accessibility to computers either via a personal computer, smart or mainframe technologies. Students are progressively anticipated to utilize e-resources during their study at the university. Furthermore, E-resource necessitates computer accessibility or any electronic device that ensures the delivery of a collected data, whether in reference to full text databases, e-journals, collections of treasured images, other multimedia resources, and a commercially available published title with focus being promoted.

The LIS dictionary conceptualizes E- information resources as resources comprising of computer programmes or data which are exclusively read and manipulated by the utilization of computers, examples of which include Electronic book, Electronic newsletter e- Journals, e-records, and Electronic magazine. E-resources that are delivered in electronic format are (OPACs), online journals, CD-ROMs, computer networks and internet linkages. (Jagboro, 2003; Ehikhamenor, 2003; Shulling, 2006).

Electronic information resources (EIRs) are resources that are available through ICTs. Thus, ICTs have remodeled the accessibility modes to information dissemination and

delivery, and how undergraduates in HEIs worldwide utilization of information in research endeavors. On account of the influence of ICT on academic research, undergraduate students in developing countries are still primitive in comparison with their counterparts in industrialized economies regarding the accessibility of the technology. The key contributory element to this phenomenon has been the EIR, the technological gaps between emerging and industrialized economies precisely regarding the electronic information environment. Hence, the major challenge related with electronic information in emerging economies has been that of a less-motivating electronic information environment featured by inadequate adoption of ICT infrastructures at HEIs and other academic climes. Also, Shuling (2007), posited that in modern years, electronic information has catapulted to becoming a key resource in every tertiary institutions of learning. The development and multiplicity of e-resources, specifically e-journals, has in predicting the extinction of the printed journal by many researchers for instance, as postulated by Liew, 2000 as well as Harper, 2006) a new paradigm is widespread in scholarly circles. In the ICT industry, "place" is insignificant. The transition from text-format resources to resource-inclined learning has resulted in greater utilization levels of EIR infrastructure and this requires diverse sources of media (Kinengyere, 2007), thereby making the utilization of electronic information systems a challenging concern for those studying information and library management studies in academic libraries (Armstrong, 2001). In today's information era, undergraduate students would eagerly embrace the convenience that is offered by electronic resources they would also be wholly adapt the new technologies (Elam, 2007). According to Brophy (1993) the merits of e-resources which surpasses printed formats are: simplicity of usage, speed, multiple search and save

abilities, repeat and print searches, frequent updating, and the capability to retrieve data even beyond the institutional boundaries (a specific merit for the students on distance learning admission). Dadzie, (2005) stated that their merits include unlimited accessibility (which is not hindered by finance or distance), accessibility to updates on information and delivery of wide-ranging links to other resources or associated content. Compelling arguments are in favor of students using electronic resources. However, Okello-Obura, 2008 stated that awareness and retrieval of information on computers is required in the effective search of these e-resources. It is expedient, hence, it is essential to investigate the required computer capabilities for students to gain accessibility to e-library resources. Furthermore, Tella, (2007) analyzed the benefits of effective information retrieval by undergraduate students' is a useful skill that is highly required for their academic pursuits and vocations, in addition to facilitating optimistic and effective utilization of e-resources. The capability to navigate the digital world is prerequisite for excellence in the academia. Undergraduate students are required to utilize e-information resources in their institutions. Further, Lawson, 2005 stated that in a bid to effectively utilize the developments in the e-resources industry, undergraduate students are required to ensure the acquisition and practice of necessary ICT skills so as to enhance their academic work. The learning of skills is crucial in a technologically encouraging setting, and it can be improved via the utilization of inventive knowledge approaches.

The utilization of EIR has the impetus to profoundly modify our modus operandi, social, educational and cultural sensibilities and this will revolutionize HEIs to react and evolve positively. With deference to the technology functions in HEIs,, Shields (2000) narrated

the socio-technological activities into three phases. The early phase, is the phase of

individual computing era of pre-1980 to the middle of the 1980s produced the second, the

networking of the late 1980s to the middle 1990s; the latter, in turn envisages the rise of

virtual HEIs around the 2000s (as proposed by Rosemberg, 2001). the fascinating

concerning the third era is that a few supporters of computer-generated education are of

the opinion that the old-fashioned model of campus-based education and scholarly works

must adjust to new hi-tech certainties, (for example the digital libraries,Internet, broad

band multimedia capabilities,etc.) or the promoters of distance learning are of the opinion

that an EIR- fostered revolution canresult in making education in HEIs more reasonably

priced and satisfactory.

3.3 CHALLENGES IN ACCESS TO USE E- INFORMATION RESOURCES AMONG UNIVERSITY UNDERGRADUATES

The challenges relating to accessibility and electronic resources use stems from the

under-utilization of the resource. This simply implies that low level of skillfulness in ICT

literacy will negatively affect the levels of e-information resources usage, as depicted in

the core argument of this thesis. It is in light of this fact that many scholars such as Muller

and Chandrasekhara, (2006)   Madhusudhan, (2008); Dilek-Kayaoglu, (2008), have

unraveled the main problems associated with utilizing e-resources such as inadequate

user training or orientation, low internet connectivity bandwidth, lack of subscription

provisions in specific research fields, inadequate facilities for printing, as well as lack of

trained ICT personnel. It was also affirmed by Shukla and Mishra (2011) that the problems of poor access to internet services as the main infrastructure challenge in gaining access to e-information resources are treated with levity by majority of research scholars. Also, Madhusudhan (2010), in his study conducted in India, disclosed that for the most common problem faced by majority of respondents was that of slow speed of electronic access, as the downloading of pages was too slow, and it was a great challenge retrieving related resources. Some users complained of the availability of excess information thereby resulting in hindered access to the efficient utilization of the e-information resources proficiently as a result of inadequate knowledge of IT. In a related literature, piloted in India by Mulla, (2011), he disclosed that ill- timing and inadequate training was a major problem faced by academics in their utilization of e-resources. Other respondents criticized about software and hardware challenges correspondingly. Further, Bhatt, (2011) acknowledged that the majority of the challenges associated among e-information resources were snail-speed of internet access, and non- cognizance about statutory delivery in retrieving e- information materials by the HEIs, hardware and software challenges, insufficient supply of e-information resources, uncertainties in durableness and originality of digital information resources provided, high cost of e-resource purchase, and lack of legal provisions. Further, Bhatt (2009) opined that in Nigeria, it was discovered that matters like a enormous mass of unrelated information were generally confirmed by the respondents, hence, the necessity to filter the outcome from search were some of the basic challenges faced in their utilization of e-information resources. Other problems witnessed in the study were inability to locate required data, delay in downloading materials, inadequate search skills, costly nature of access to Wi-Fi, erratic

electricity supply, problems of inaccessibility to some websites, and navigation challenges through some e-information resources. In a study conducted by Ingutia-Oyieke (2010) they identified some limitations associated with e-resources utilization and ICT infrastructure, and this include incessant power outages on campus, culminating in serious consequences for the Local Area Network (LAN), often resulting in frequent breakdown of power, thereby damaging library. The study piloted by Khan, (2011) at the Islamic University of Bahawalpur, Pakistan, was anchored on the investigation of attitudes of undergraduate students towards e-learning. The results depicted that the interviewees were displeased with the provision of Wi-Fi services, slow internet connectivity and lack of adequate computers in the laboratory. In light of this, Delane (1992) despite the popularity of the internet services, undergraduate students may repel the utilization of e-resources on account of slow response time and unrequired web information generation. Further, Branch, (2000) theorized that large information volumes are loaded on computers on daily basis, and in several occasions, such e-resource information lacks review or editing, nor any review mechanism to regulate the integrity, reliability, authenticity, veracity or suitability of the material for public consumption.

The empirical study of motivation, strategies and challenges in e- information resources use by student library users as disclosed by Climah, (2013), their study denotes that 22 (18%) respondents from the four universities surveyed unanimously concurred with the notion stating problems associated with inadequate internet connectivity and computers in the libraries of their institutions. Also, 29 (24%) complained of epileptic electricity supply was a major barrier towards accessing e-resources. Another challenge that was observed

was slow internet connectivity, (as identified by 17, 15% of the surveyed students). The students that were inadequate in their ICT skills, who were greatly hindered in their accessibility to e-resources were 16 (13%). 12 (10%) of respondents complained of difficulty in retrieving relevant e-resource information, whereas (20%) criticized the shortage of IT equipment as a key constraining aspect to accessibility and utilization of e-information resources. Inference could thus be made from the above premise, (29) undergraduate respondents lamented the problem of epileptic power supply as a key problem in retrieving e-information resources in the surveyed HEIs. This was trailed in number by 24 of the undergraduate respondents who disclosed that IT infrastructure were grossly in short supply. Those in agreement with lack of ICT skills as a problem in e-resources utilization comprised of 13% of the undergraduate respondents, and this result conforms to Ojo's (2005) submission, who resolved that the level of e-information resources usage among the undergraduate respondents is critically abysmal. Also, ten (10) of the respondents expressed dissatisfaction associated with underfunding of relevant information.

Aina (2014) exposed the fact that only 40 (47.1%) and above of surveyed students were fully accessible to e-journals, AJOR, JSTOR databases and EbscoHost. E-Resources for research methodologies were usually accessible to the student, 38 (44.7%), 36 (42.4%), 30 (35.3%), correspondingly. In addition, it was discovered that the underlisted e-information resources were inaccessible to the surveyed students, and these include dissertation and theses 19 (22.4%), Bookboon 19 (22.4%), SAGE 22 (27.1%), HINARI 20 (20.5%), DOAJ 55 (64.7%), the National Virtual Library e-information resources 25

(29.4%) and World Bank Open Knowledge Repository 31 (36.5%), and this consequentially interprets to mean that Inspite of the subscription of e- resources to the respondents, they were still largely uninformed of their existence, as well as their inaccessibility emanating from one problem to another such as insufficient e-resource infrastructure and epileptic supply of electricity. It was also stated by Omeluzor, (2014) that inadequacy of personal computer and incessant supply of power among other reasons are key limitations hindering e- information resources use, which consistently affects the research productivity of students in the Nigerian varsities.

Further, inadequate time as well as ineffective information recovery skills are key challenges of e-resources utilization (Bakare, 2013).They also disclosed that quicker accessibility to information was depicted as a major merit of e-resources. In the same vein, Obuh (2009) asserted that accessibility speed, and advanced search skills were discovered as major benefits, while the major demerits include, low coverage levels, inaccessibility and inability to read. Also, scholars such as Fatoki (2004) ; Okiki , (2011) propounded that "academic libraries cooperate with other associates and institutional colleagues so as to contribute, provide and attain the actualization of the educational mission statements of their establishments were fundamental capabilities of ICT literacy comprised in recognizing basic needs, retrieving required resources, assessing, handling and utilizing information and conceptualizing the social, ethical and legal facets of utilizing information. It is a known fact that all over the world, library institutions provide vast diversities of EIRs for usage by students, scholars as well as for administrators and the generality of teaching and non-teaching staff in their respective organizations. These

EIRs account for an integral portion of the referral services offered by the institutional libraries. The financial implications incurred in the acquisition and maintenance of both human and capital resources are vast and very costly. Therefore, it is essential to guarantee optimal exploitation of these resources. In the study of Okiki, (2011) he disclosed that slow internet connectivity got the uppermost ranking of 69.87% (about 1528 respondents) among the challenges faced by the interviewees, and this was followed by epileptic electricity supply, ranking 910 (41.61%) while inadequate IT skill got the lowermost ranking of 77 (3.52%). Aramide, (2010) advocated that epileptic supply of power, lack of required ICT skill, dilapidated infrastructure, and huge costs are key limitations to the utilization of e-information resources and audio visuals by the students. Amalahu, Oluwasina explained that advancement in search skills makes it possible to retrieve significant pieces of information in little time. From the foregoing, a research piloted by Khan, (2011), the interviewees were requested to disclose their online search challenges. Most of the respondents were unaware of advance searching methods no=38, unawareness about Bolean logic utilization = 24, inability in selection of copy and paste PDF materials (23), inability to save PDF information (27), inadequate proficiency in databases use (19), encounter search difficulties in formulations for keywords or query (14), inadequate browsing knowledge of e-journals (12) and accessibility to e-journals (4). Also, Adeoti-Adekoye, (1997) and Fatoki, (2004) stated that inspite of the obtainability of the e-information resources and their significance to HEIs and the academia in general, their effective and efficient usage in African countries are greatly hindered by several factors such as underfunding of HEIs, expensive IT infrastructure, high exchange rates, dilapidated telecommunication facilities etc. Also, attitudinal behaviors to a specific

phenomenon would probably enhance or inhibit human disposition to such phenomenon. Positive attitudinal behavior are widely renowned as a prerequisite requirement for effective usage and incorporation of e-information in learning and research.

ICT literacy skills

Access

Manage

Integrate

Evaluate

Create

Use of Electronic Resources

Undergraduate Factors

*Lack of interest

*Individual background

*Finances

*Beliefs, Awareness & Acceptance

*Demographic factors

Institutional Requirements

*Inadequacy of facilities

*Installation of e-resources

*Training, seminars & workshops

*Free access to internet connectivity

Figure 3.1: Factors affecting the access to exploit electronic resources

Source: Fieldwork, 2018

This diagram depicts that the elements of ICT literacy skills (such as the ability to access, manage, create, etc.) determine the effective utilization of e-resources, in addition to some factors such as beliefs, awareness, finances, demographic, etc. of the undergraduate respondents also contributed to the utilization of e-resources. Therefore, it is essential for the institutional requirements to meet up with the conditions that will promote e-resources use. Finally, the effective collaboration of ICT literacy skills, undergraduate factors and institutional requirements will lead to the effective utilization of e-resources. This is in conformity with the core argument of this study that ICT literacy skills and demographic factors greatly influence the level of e-information resources use among the study population.

3.4 ICT LITERACY SKILLS ON THE UTILIZATION OF ELECTRONIC INFORMATION RESOURCES BY UNDERGRADUATE RESPONDENTS

In this era of globalization, the significance of ICT to users generally and information specialists in particular is worthy of note. In light of this fact, it is noticed, as stated in the core argument of this study that e-information resources are significantly under-utilized by undergraduate respondents in the HEIs selected in this study. This is a valid statement

due to the fact that the provision of ICT infrastructure fast-tracks speedy timely and ease of access to diverse information resources across the world. In fact, it is unimaginable to visualize a world that is void of information technology. The delivery and utilization of ICT is integral to the respondents, information stakeholders and institutions. While it is essential to identify the prominence of ICTs, it is equally important to determine their effective utilization by both academics and undergraduate students. As postulated by Lowe and McAuley (2002) epitomized ICT literacy as "the abilities and skills that will facilitate the usage of computers and related information technologies to meet individual, scholastic and labor market objectives". Ebijuwa (2005) defined ICT as elements for collecting, transmitting, storing, processing, and disseminating information. Electronic information resources such as electronic journals, e- books, CD-ROMs, Online databases, OPAC, and other e-resources have propelled the world into an information era on account of developments in ICT. No organization or institution can still depend on outdated printed information resource and ensure efficient and effective performance. The important concepts that assisted in unpacking the core argument of this study are hereby defined and discussed below.

3.4.1 Information literacy (IL)

Lau (2006) explained IL as digital competencies that comprise of the capability to ascertain desired or required information, and the competence to evaluate, pinpoint and ensure the effective utilization of information. It is commonly conceived as an understanding of capabilities permitting persons to identify when information is rquired, and have the capability to discover, assess, and efficiently utilize the required information

(Udo, 2004; Ottong, 2005). The conceptualization of IL presumes that a operator of e-resource acknowledges the germaness of information and is capable of discovering, appraising, utilizing and consequently disseminating information effectively to unravel particular problems for purposes of research. Also, it is essential to state that not all information is created alike, some are imposing, recent, dependable, but some are subjective, deceptive, and untrue; the amount of information available is going to keep increasing and the types of technology used to manipulate, access, and create information will likewise enlarge". Furthermore, undergraduate students are faced with diverse information choices in their studies and other vocations, and in their general lives. With these, diversity of information is obtainable today search engines and e-books, web-based news sources and databases. In support to this, the students are positively influenced..

As highlighted earlier on in this research, a study carried out by the Department of Higher Education and Training in South Africa in 2009, found out that new graduates lacked IL skills, which is the capability to find and utilize information and the competence to select relevant information for solving problems This background information triggers the present study and their relevance to electronic resources utilization among undergraduates in the selected universities will be carried out.

3.4.3 ICT literacy

In 1996, the US Dept. of Education defined ICT literacy refers to "capability to utilize computers and other technology to advance performance and productivity, learning, and.

In the 21st century, all systems in the educational sector highlight the significance of ICT literacy (Saade, 2009). ICT literacy has developed beyond writing, reading, and doing arithmetic which incorporates the capacity and computers usage, and the operation, computer software and hardware usage in processing information. Claro, (2012) explained literacy in ICT as problem-solving of information, knowledge and communication and in the digital world, specifying that ICT literacy involves both efficient and mastery of skills and higher-order cognitive skills. The proficiency in ICT skills is a prerequisite in this era of globalization, since these serve as problem solving tools in digital environments. Hence, ICT literacy is not possible without functional ICT skills. In this globalization era, the significance of ICT to the generality of users and students in specificity cannot be overlooked. This is a valid assertion, as ICTs enable speedy, easy and rapid accessibility to diverse sources of e-information in the world at large. It is now unfathomable to envisage a world devoid of IT. ICT utilization is an essential part of the entire academic system, as it is important to information stakeholders and the academia at large. (Quadri, 2012).

ICT literacy is a vital requirement of in the 21st century, despite the fact that it is progressively shaped by electronic networking and IT, it is on this premise that Fourie, (2004) stated that in this ICT-oriented setting, the academia must become ICT literate in order to excel in their vocation. Also, Markauskaite, (2006) opined that ICT literacy "refers to knowledge of technology applied to information problem solving". Education Testing Service, (ETS, 2007) conceptualized ICT literacy to mean the application of technology and tools of communication, and networks for the purpose of accessing, evaluating,

managing, creating and integrating information for the purpose of effective functioning in an information-driven society. Lowe and McAuley (2002) conceptualized literacy in ICT as "the skills and abilities that will enable the use of computers and related information technologies to meet personal, educational and labor market goals". In another definition by Ebijuwa (2005), he referred to ICT as the essentials for collecting, handling, storing, transmitting, as well as disseminating of resources. Furthermore, Oliver (2000) illustrated the ICT literacy of respondent as a comparative degree of the users' capability to utilize ICT for scholarly purposes. The focus of this research therefore, deals with the ICT literacy skills of students in HEIs, and is opined as a relative degree to which the undergraduate respondents to make use of ICT for educational and learning purposes. Lou, (2010) stated that the ICT literacy began in the dispensation of IT, and part of information literacy comprises of basic knowledge on computer usage.

The various ICT definitions as stated above reflects the concept of ICT literacy as an ever-evolving discipline which permits the evaluation of numerous features of literacy, from everyday skills resulting in ICT efficiency.

3.5 ICT LITERACY SKILLS AMONG UNDERGRADUATE STUDENTS

ICT literacy skill can be explained as the capability to proficiently and analytically navigate, assess and create information through the utilization of wide-ranging digital technologies, as it necessitates the user "to recognize and use that power, to manipulate and transform digital media, to distribute pervasively, and to easily adapt them to new forms". ICT literacy skill does not substitute for conventional forms of literacy, instead, serves as building blocks for conventional forms of literacy (Jenkins, 2009). ICT literacy

skills is the amalgam of the two terminologies, i.e. ICT and literacy skills.. Digital or electronic information is a representative illustration of data, while literacy denotes the ability to read so as to acquire knowledge, and think critically and write coherently,about the written word (Warschwer, 2010). ICT literacy skills played an integral role in shifting the emoluments of U.S. employees since the 1980s, with higher pay going to workers with higher ICT literacy skill levels (Bresnahan, 2002).

ICT literacy skills is a major instrument for self- actualization among the academia. Speaking generally, it has be detected that technological advances can harness economic prospects for the underprivileged, increase service delivery to the underserved, advance governance, thereby leading to the overall benefit social change. Also, ICT World Bank Group policies have concentrated on aiding restructuring, harnessing accessibility, and ICT human capacity, and ICT applications. But access and use of the internet and broadband is still much lower in poorer countries due to lack of necessary skills to adapt and adopt these ICT facilities for personal development and national use. The education standard in Africa is falling every day.

In the industrialized economies of the world, HEIs are incessantly updating their academic curriculum to incorporate digital literacy so as to stay abreast of fast-tracking technological advancements. This frequently includes the usage of classroom computers, the usage of instructive software to teach academic syllabus, library and academic materials being made available to the undergraduate via the internet. Most countries in Africa are under developed in relation to the utilization of ICT in their educational sector. Some

undergraduate students in universities cannot still operate a computer system without assistance not to the extent of sending mails. Therefore, research problems will address challenging issues associated with literacy among undergraduate students, because they are the primary information users. Beebe (2004) posited that ICT is an abbreviation which typifies the relevance and integration of computers, software, networks, satellite links and generate, interchange and information knowledge. The usage of ICT has greatly developed and widened the influence and skillfulness of its users on ways of seeking electronic information. Further, ICT literacy skills have developed into increased significance in the achievement of a degree-based education, and will influence students manipulation of these digital resources and the way their utilization for learning purposes. Thus, ICT literacy capacities deal with the adoption of ICT for precise commitments. It is not just about adopting operating systems or software package, neither is it associated with keyboarding competences and the capability of users to follow directives. Fairly, ICT literacy competences of users' relates to their capability to utilize their ICT knowledge to discover, advance and represent information; whether as text, number, or image, or an integration of these.

It is suggested that in a bid to effectively utilize the developments in the ICT industry, it is germane for students to ensure the acquisition and training of required capacities required to achieve them. It is on this premise that Dutton (1990) recommended for the acquisition of optimal skills required for the maximization of ICT potentials. These skills include competency and proficiency in computer procedures, structural knowledge of guidelines and databases which must be incorporated into the e-resource environment by the user,

in addition to the possession of adequate knowledge regarding the instructional methods that are connected with one another. Also, in another study by Nikitakis (2007), he disclosed that ICT skill denotes the capability to fully understand and obtain fullness of capacities, such as evaluating, recognizing, and the efficient utilization of the given information. Hence, one should not only acquire basic skills in computer manipulations, but also communication and information retrieval competences. Akintunde (2004) specified that the capability to utilize computers is not the only ICT expertise required in the exploitation of information placed on the internet. In order to take advantage of internet materials, one must be ICT compliant. Haywood (2003) affirmed that for student to achieve a successful academic quest, they must obtain a number of ICT literacy competences that include: understanding the use of computer to carry out numerous functions such as utilizing applications, generating and revising documents, spreadsheets or presentations. Some basic typing abilities will be necessary; having ability to identify numerous ICT technologies and their various procedures. Iwona (2008) noted that students must possess and practice the required skills essential for the exploitation of the e-resources, so as to utilize the benefits of the rapidly developing array of electronic resources. These expertise include basic computer knowledge, mastery in manipulating output software, communication of electronic skills as well as internet expertise. These competences are required to efficiently matriculate throughout the learning practice in addition to helping them to secure employment in future. Hence, the increased usage of digital technology and internet us by undergraduate respondents is an essential determinant of technological improvement. At this juncture, it is expedient to discuss the benefits of ICT literacy skills.

3.6 BENEFITS OF ICT LITERACY SKILLS

ICT literacy skills are imperative due to the fact that it is a prelude for e-library services networking and dissemination of resource knowledge. ICT literacy skills also facilitates the advancement of e-Journals, e-Books utilization as well as the formation of electronic institutional storehouses. In order to attain and optimally utilize and ensure excellent library and information services, library operations must incorporate ICT facilities in their daily activities, and these include, software, hardware and other communication services. Sufficient ICT skill is sine-qua-non for successful accessibility and optimal utilization of ICT in universities so as to obtain the needed information. The value of e-resources and services are much valued if the information users are fortified with the necessary literate skills to easily share, distribute, update, manipulate, and rapidly searched and exploit it in meeting their information requirements. Lastly, the impact of ICT literacy skills of the respondents has encouraged the digital resources utilization regarding the usage of e-books and e-journals, and the performance of other academic and research activities.

There is no doubt that ICT can be a major source of sharing knowledge and information and they have come to complement physical library resources. Their availability and adoption in teaching, study and learning especially in developed countries have increasingly improved students" information seeking and retrieval. There is thus a general belief that undergraduate students will make effective use of these facilities to address their information needs but research has it that in spite of all these benefits derived from

the usage of ICT facilities that some students do not make extensive and effective use of it (Quadri, 2017). On this note, since it has been reviewed from literature that despite the benefits of ICT literacy skills, the respondents still face challenges, which has been discussed in this chapter above, hence, this resulted in the need to assess demographic factors as part of the determinants of electronic resources use, as discussed below.

3.7 DEMOGRAPHIC FACTORS ON ELECTRONIC RESOURCES UTILIZATION AMONG UNDERGRADUATE STUDENTS

E-information resources of undergraduate students can be affected by demographic factors (e.g. gender, age, and language), which is in line with the core argument of this study. Several studies have been carried out to investigate how age and gender determine ICT literacy skills of students. Okore (2011) in his study accounted that gender did not influence ICT usage for scholarly communication. This findings is contrary to reports of Cornelliussen (1997) and Berg (2002) that males recorded higher frequency in terms of ICT usage than the female respondents. From this study, it seemed clear that women have strengthened their relative position as users of ICT. Jackson, (2001) also disclosed that the generality of females are discovered to be less favorable in their disposition to computer use. Waldman (2003) posits that gender depicts relevance in the examination of e-information resources. In another related study of students in high school it was discovered that their attitudinal behaviors towards computers and their utilization of computers inclined towards diminishing with computer experience.

Basssi (2011) posited that in her research on higher school students, it was discovered that that their attitudinal behavior to computer and utilization varied significantly on account of gender. In another study by Shapka, (2003), he researched on numerous features of ICT literacy .His result depicted that there were no gender dissimilarities in self –efficacy and actual results from difficult tasks on the computer. However, his result reveled substantial dissimilarities in students. Concerning the respondents' choices of strategies, it was discovered that when encountered with a difficult computer challenge, the females were more likely to be dependent on the use of help function than their male colleagues. In the same vein, Markauskaite (2009), stated that many recent research revealed male and female differences which are associated with ICT and their accessibility to ICT and foundational skills in computer. Meanwhile, gender differences now occur in new areas of ICT applications. As researches showed, males make more regular uses of internet facilities, they perform more competitive more e-learning functions, in addition to facing different challenges in their utilization of ICT than their female colleagues.

Adomi, (2004), recount that the acquisition of internet skills and knowledge by most students is acquired through hands-on self-teaching exercises, such as gender, it was discovered that the utilization of e- information resources by the students was to perform different tasks. Ford, (2001) disclosed that females are more limited in their search skills for online information, unlike men who are more competent and comfortable with the utilization of e-information resources, thereby making more use of varied set of internet applications. Rajad, (2005) reported that male students were more regular and longer users of computers. A noteworthy dissimilarity was noticed in terms of gender, concerning

the men and women in the length of hours they spend, students said they had been using computers regularly. More males felt competent in computer skills than females.

In other studies conducted by Bimber (2000) opined on the gaps associated with gender on the utilization of the internet is more obvious especially in the utilization of the worldwide web. The research outcome revealed that the women occasionally used the web facility, and there was the propensity by the women to be transitional users in comparison to their male colleagues, as they were less frequent users of the internet than the males. Further in this discussion, Manda (2007) account that gender is related with the utilization of e-information resources, stating that male students showed greater penchant levels in their utilization of e-information resources than their feminine colleagues. They further stated that even when attitudinal behavior was considered as an important element regarding e-resources utilization and capacity building, there was need for training in the utilization of e-information resources, as this ensures the gender and e-information resources enhancement relationships.

Ozoemelem (2009) opined that the most noticeable gender dissimilarity in the use of worldwide Web resources is discovered through the utilization of applications made on the internet by females and males. From this research, it was revealed that the male college respondents are more anticipated than the women colleagues to utilize e-resources and services for purposes of recreation (such as accessing restricted sites, accessibility to news channels and chat groups, playing online games, gambling, receiving up-to-date information on new developments, and hunting for personal information uses), while their female counterparts are further expected to utilize e-resources for chatting with family and friends. In accordance with the position of Shaw,

(2002), these research results underpin the popular notion that women show preference in their utilization of e-resources for communication, while men utilize the worldwide Web to gather as well as for entertainment purposes.

Odell, (2000) put forward that a few gender dissimilarities have been discovered by users regarding attitudes towards technology, internet use intensity, preference of online applications, as well as proficiency in the utilization of cyberspace. Research of web use among college students have been confirmed to be highly useful, as studies relating to this category permits for an evaluation regarding gender dissimilarities in an organization where women and men usually enjoy equality in accessibility to e-resources. Al-Saleh (2004) investigated e-resources utilization by students on gender grounds, and the discovery was made of a high correlation regarding gender and e-information resources utilization, as the males employed the use of e-information resources more than female colleagues in the institution's Department of Library and Information. Put differently, the gender gap in the utilization of electronic resources is quite insignificant. Jackson, (2001) also reported the less favorable computer attitudes of the female gender generally. This is also supported in literature by Schumacher, (2000), who posited gaps related to gender in e-resources utilization has majorly streamlined the age category of college students.

As postulated by Ozoemelem, (2009), the high preponderance of e- resources usage is obvious in gender considerations among both the females and males, and despite the lack of technological know-how in the operation of e-resources, the respondents derive fulfilment from their utilization of e-resources although hampered by their inadequate ICT

experience. Their impression of e-information resources ease and usefulness on web usage is the resultant effect of their high level of e-resources use. Also, Okiki (2011) disclosed that age is an important variable which empirically correlates with ICT and use of e-resources. Younger generations develop interest in computer usage. For instance, Laguna, (1997) discovered substantial age dissimilarities on ICT tasks, as evaluated by the older adults who make some correct choices over protracted time in order to make more quality decisions than younger adults. In the same vein, Waldman (2003) stated that one variable which have been found to relate comfort with computers e-resources utilization is age. Younger users developed using computers, and they are carried away with the state-of-the-art functionalities of computer. On the other hand, high probability exists that their older colleagues and the returning students are less-exposed to the usage of computers, and this consequentially results in greater levels of anxiety.

Al-Saleh (2004) findings indicate a high correlation regarding the utilization of library resources and age and it was noted that the older students frequently utilized e-information resources than their younger colleagues, who enjoyed adopting new technologies. Delgado-Gomez (2002) , in his study of the utilization of virtual libraries and young adults in Spain, he revealed the features of young adults, and these include: they do not have penchant for reading fiction, as they perceive it to be wastage of precious time, they utilize information for the purpose of computing their school work, further, they are willing to embrace more user-friendly and faster methods in their quest of obtaining information, they spend their leisure hours majorly by playing music, making use of computers, walking with friends or watching TV. From the foregoing, the relevant literature as discussed above, which are in agreement with the core argument revealed

that some demographic factors influence the utilization of digital resources. Pertinent to these are the attitudes and perception of undergraduate students towards e-resource use, as discussed below.

3.8 ATTITUDES AND PERCEPTION OF UNDERGRADUATE RESPONDENTS ON THE UTILIZATION OF E-INFORMATION RESOURCES

Despite the reviewed literature on ICT literacy skills and demographic factors, it has been observed that the attitudes and perception of most undergraduate students determine their use of use of electronic resources. Attitudes are conceived as beliefs and feelings that frequently determine the mental perception of employees to intended actions and their environment (Velnampy, 2006). In another definition by Paul, (2007) …. Attitudes are "inclinations and feelings, prejudices or bias, preconceived notions, ideas, fears, and convictions about any specific topic". Further, Allport (1935), elucidated attitude as "a mental and neutral state of readiness organized through experience exerting a directive or dynamic influences upon individual's response to all objects or situations with which it is associated". In the definition of Shahriza (2007), he defined attitude as an "individual's sentiment about reading, causing learners to approach or avoid a reading situation", and added that strong correlation exists between attitude and interest for reading, as the students attitudes to the utilization of e-information resources is a reflection of their perception of these technologies, irrespective of the values of the technologies. It is on this assumption, therefore, that attitudes are characterized as "inclinations and feelings, prejudices or bias, preconceived notions, ideas, fears and convictions about any specific topic" (Taiwo, 1998). In addition, Fine (1986), Evald (1996), Spacey, (2003), stated that

positive attitudes are essential in employing new technologies. In other to utilize the rapidly developing array of information from electronic sources, students must obtain the right behaviours and develop the required skills for their exploitation. Attitudes relating to e- information resources and the environment differ among users. In support of Walberg's (1985) postulation, a positive attitude towards computers strongly correlates with high proficiency levels in ICT skills.

Ray, (1998) conducted a research on the behaviour and attitudes of students regarding their utilization of e-resources. Their study depicts that a significant proportion of students graduate from their academic institutions lacking required skills to cope within the larger information-centred society. A research done by Rajagopal, (2012) relating to user attitudes and their disposition to e-resources and service delivery in academic libraries revealed a developing interest in e-information resources among the engineering student respondents in Pondicherry University. Further, it was opined by Olatokunbo (2012), who affirmed in his research on members of the academia at University of Lagos, on their levels of awareness, attitude, and e-information resources utilization, he revealed that out of the members of the academia surveyed, 55% of them were of the opinion that awareness levels attributable to subscribed e-resources by the management of library services is quite not encouraging. The study further revealed that web technology, i.e. the worldwide web is conceived as an increasingly preferred source for online reading materials. Noteworthy dissimilarities occur in academic curricula and categories of reading materials and resources particularly utilize the web sites. Nonetheless, dissimilarities in reading behaviour were also detected among male and female participants, and as posited by some scholars, the internet is portrayed as an imperative

e-information resource which is frequently utilized by the users. In relation to this, Ahmad, (2011) disclosed that 46 percent of student respondents regularly made use of the internet for their research and other purposes, and further revealed that the attitudinal behavior of men and women in relation to reading was not significant. They also laid credence to issues of gender dissimilarities in the utilization of electronic media resources, as well as scrutinising the dissimilarities between male and female students in regarding reading in a continuous environment, so as to decipher degree of dissimilarity among women and men regarding the medium, levels of satisfaction and reading choices (Liu, 2008). In another analysis, McKnight (1997) revealed in his study that students preferred to print out text rather than read from computer screens, and bearing in mind the advancement of e-information resources, it is essential to analyse reading habits and attitudes of the students. The acceptability of e-information-resources has revolutionized behavioural trends of university teachers. Similarly, Brennan, (2002), centred his research findings on the utilization of digital resources has influenced the academic behaviour on information usage, and posited that academics preferred to make use of e-journals than the printed ones, in addition to making fewer academic appointments at the library. Candela, (2010) in his study discovered that the attitudes and perceptions of academics (especially the PhD students) on the effectiveness of bibliographic management software have drastically improved over the last decade. Further, the librarians mentioned that most of the complaints received from users centred on difficulties by off-campus residents in accessing resources, platform breakdowns, etc.

In the field of psychology, (Perloff, 2016) conceptualized attitude as a mental and emotional entity which personifies and characterizes an individual, which are multifaceted

and are developed through life experiences. It is a person's disposed mind set and it is expressed toward a person, thing, place, or event (the object of attitude) which consequentially affects the individual's opinions and activities. Also, a prominent psychologist named Gordon Allport once defined attitudes as "the most distinguishing and crucial concept in modern social psychology (1935). Attitudes developed, shaped and moulded from a person's past and present life experiences. Major considerations in the study of attitudes include attitudinal capacity, change in attitudes, users' behaviour, and relationships of attitudinal behaviour.

Dutton (1990) recommended that much greater skills are required for optimizing the potentials of e-information resources than those needed to search printed documents, as these required skills comprise of structural information and the guidelines which must be incorporated into the computer by the investigator, in addition to possessing a clear perspective of the ways in which e-information are interrelated with each other. In light of this position, Brophy (1993) opined that users seldom appreciate the required skills to search these sources, affirming they are illusorily easy to utilize. The capability for effective search and retrieval of information is a useful skill that is required for optimistic and effective manipulation of e-information resources during their academic undertakings in the university. Attitude or possible user reactions can be either positive or negative. The speedy development of ICT has revolutionized change in the information palace, thereby resulting in several choices to the users in their retrieval and utilization of diverse information sources appropriately and painlessly. Consequently, Swain, (2009) disclosed that e-information resources have witnessed significant development in the modern

library reserve in meeting diverse requirements of the academia and researchers with minimum time and risk.

Researchers (such as Agarwal 1997; Payo 2000) stated that attitudinal behaviours influence adoption rates and degree of IT utilization. In support of this assumption, age and gender are relevant element in investigative utilization of digital resources. Further, gender influences digital resource utilization. Waldman (2003) opined that females tend to only apply it for work purposes, males often enjoy browsing on the internet for relaxation and pleasure, while. Ford, (2001) discovered that females experienced more challenges while accessing online information, and exhibit capable and contented dispositions in their use of e-resources. The more frequent users' of-resources are the males, while females use less varied e-resource and internet applications. In universities, with higher levels of technology utilization, it is imperative to assess how technologically rich settings impact their students toward accessibility to e-resources. Many factors influence attitudes. Some students have negative attitude towards e-resources. Negative attitude emanates from lack of interest and ICT skills. For more effectiveness, it is essential to be knowledgeable on user attitudes towards e-resources. Also, Ray, (1998) recommended that the required skills in accessing optimal potential of e-information resources are increase beyond needed the printed materials. These skills comprise of structural knowledge of the database guidelines having clear knowledge of guidelines that are interrelated to one another. Some students exhibit negative behaviour towards e-resources as a result of inadequate training. It is on this premise that Uwaifo (2010) proposed that government should impose necessary ICT training at all strata of learning. The students on their own can also develop capacity in ICT proficiency.

In this 21st century, students must adopt a positive attitude towards the utilization of e-information resources. Students especially need to be trained and re-trained in exploitation of digital resources in order to take part in the modern technology. Students need to be trained in the utilization of searching elements like e-database, the utilization of online catalogues etc. In this regard, Omoniyi, (2009) reiterated the need for acquisition of expertise and capability in the e-resource use by the students is essential to obtain quality and efficient information search. For instance, the advent of open access journals and other e-resources has resulted in different attitudinal dispositions towards e-resources. Open access is one of the easiest and most affordable ways to electronic resources and in the last few years, open access resources have developed and delivered reasonable ways in the provision of access to some e- journals (Price, 2009).
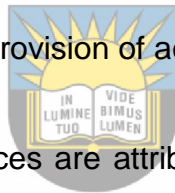
Attitudes toward electronic resources are attributable to challenges encountered when accessing e-resources. For example, in a situation of insufficient computer technology in accessibility to e-resources or deplorable internet connectivity, student's positive attitudinal behavior could be negatively influenced It is on this premise that problems faced affect access to e-resources in universities. The opinions for students using digital resources are convincing. A satisfactory knowledge of computers and retrieval techniques is necessary to search these resources efficiently. For these reasons, students need to be trained in the use of searching tools like e- databases, the use of online catalogues, online journals, etc. In many African HEIs, efforts have been put into action to provide electronic information services to the universities. Some universities are in the process of installing computers, and internet services, while some others have already installed the internet services.

Therefore, Dadzie (2005) e-information materials are priceless research tools that provide extensive links to additional resources. Nevertheless, information of ICT apparatus and retrieval methods is desirable to explore these resources efficiently, and has implications regarding users' attitude towards e-resources use and self-efficacy. Self-efficacy therefore is defined is an individual's perception regarding his/her competence in organizing and executing a determined development of action that is essential to the attainment of certain performance levels. Self-efficacy beliefs enhances enthusiasm of the aims that individuals envisage for themselves, their expended effort, as well as the longevity of their perseverance in the face of challenges. The respondents who have self-assurance exhibit great confidence regarding their abilities. In conformity to this study's viewpoint, Teo, (2001) and Shuh, (2003) disclosed that students who exercise self-confidence to exploit e-resources are more than those with low self- approval. Hence, this thesis was envisioned to discuss the attitudinal behavior of students regarding e-information resources exploitation and aims at discussing the merits students derive from e-information resources utilisation.

3.8.1 Perception

According to Lindsay, (1977), perception is closely correlated to attitudinal behavior, is the process by which individuals establish and understand sensation to produce an expressive knowledge of the world. Put differently, a person is challenged with a condition or eventuality, which is then understood into something important to he or she based on previous life involvements. Nevertheless, what an individual understands or observes may be substantially different from reality. Like most social science fields, perception (or

social perception) has been conceptualized in numerous behaviours since its first usage. From the lay man's viewpoint, perception is conceived as an act of being mindful of "one's environment through physical sensation, which denotes an individual's ability to understand. However, many social psychologists have tended to develop the concept around one of its most essential characteristics that the world around us is not psychologically uniform to all individuals.

Perception is an active process as one selectively perceives, organizes and interprets what one experiences. Interpretations are based on the perceivers past experiences, assumptions about human behaviour, knowledge of the others circumstances, present moods / wants / desires and expectations." According to D. Scott, "Perception is a discerning procedure is capable of sensing much more data than the brain is capable of handling. Six factors which enhance selectivity are background, concreteness, extensity, intensity, velocity, contrast, and impressivity." perception is not only comprising of stimulus variables that make up the perception of our environment - like sounds, colours, shapes, textures, etc. but other variables too which exist in within the perceiver.. Perception (which originates from the Latin word *perceptio*) is the organization, documentation, and understanding of sensory information in order to characterize and understand the environment *Schacter, (2011).* All perception involves signals in the nervous system, which in turn resultant from physical or chemical stimulation of the sense organs. For example, vision involves light striking the retina of the eye, smell is facilitated by odor molecules, and hearing involves pressure waves. Perception is not the passive receipt of these signals, but is shaped by learning, expectation, memory, and attention (Bernstein, (2010).

3.8.2 Perception of undergraduate students for electronic information resources for academic purpose

In recent years, Shuling (2007) disclosed that e- information has progressively developed into a vital resource in every institution of learning. The progress and multiplicity of electronic resources, especially e-journals, in the past decade has led in the prediction of the extinction of the printed journals (Okello-Obura, 2008). Further, Majid (1999) contends that technological development resulted in the delivery of new horizons for the creating, storing, accessing distributing and presenting information. "The impact of moving from text-based to resource-based learning has involved heavier use of library resources and a higher demand for diverse media sources" (Kinengyere 2007), and this results in the delivery and utilization of digital resources in HEIs a precarious matter for those employed in information and library services (Elam 2007). E-information resources provide students in HEIs with several prospects compared to their forerunners. It is on this premise that Liew, (2000) opined that reading an e-journal is different from reading a printed version, many users ascertain the likelihood that electronic materials provide users with advanced functionality features beyond what is achievable in printed format.

 Preference to electronic information resources entail not only the issues around financial and physical and access for the widest range of people and localities but includes also

having all groups in society seeing the relevance and potential for gaining from them, and their meaningful contents. The sources of electronic information resources include the Laptop, phone, cyber café, library, personal computer, departmental laboratory or libraries. Access to these sources can be through home, school, and work place or through a range of community locations, and this to a large extent helps to determine the preference to a particular electronic information resources. It includes an adequate technical infrastructure with the need to develop the skill base as a necessity for optimum use of EIR. Indeed, accessibility to these services has become an important issue. This is due to the fact that we live in a rapidly changing society, , where information is power and accessibility to it is a fundamental human right. (Dike, 2000).
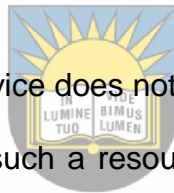
The university and information service does not deny legitimate access to information by any student, but recognizes that such a resource may be open to misuse and abuse. While the internet contains a wealth of valuable and interesting information, some of this information may be inaccurate, out of date, controversial, false, offensive and/or illegal. Therefore, it is the undergraduate students' responsibility to ensure that they exhibit the right attitudes and perception towards the use of information you discover on electronic information resources. According to Truett (1997), HEIs need to advance in multifaceted plans for ensuring that students' rights and freedom of information are protected and respected and, while both lawful and procedural safeguards offer some declaration to students that HEIs internet usage is educationally sound. Nevertheless, Casey (1997) revealed that student's expectation of finding information on digital resources is not a straight forward matter. He opined that that student without prior knowledge of particular

protocols, when engaging search terms and keywords will face obstruction in accessing information.

In the African continent, electronic information resources are very useful to students because they help them to access relevant, remote and germane information. Students can interact and deliberate on important academic issues by means of interactive chats and video conferences. (Adomi, 2004). They also help in exchanging ideas with colleagues through e-mail, (Ezeji, 2008). Dike (2000) stated that one of the reasons why students prefer digital technology is because it provides instant access to information from a multiplicity of choices, and this motivates the students to learn. In most African universities, undergraduates find electronic resources useful as they help them to have access to unimaginable resources or information. This on the other hand has helped them in overcoming the problem of scarcity of new books in the library.
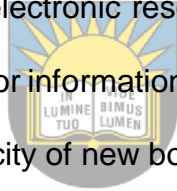
Many students in universities find electronic information resources useful because they are time saving. Adomi, (2004) opined that students have to access the internet to supplement notes given to them by lecturers, to complete class assignment, write the project and to communicate via e-mail. In this regards, Temopir (2003) disclosed the clarity in assertion that there exits an escalation in service delivery and exploitation of e-information resources because of the unavailability of the traditional print format any more. More reasons given for the student's use of electronic resources in Universities is that many students are beginning to depend upon the internet and electronic journals, because publications are appearing with mixed media and increasingly in a complete electronic format, Campos (1997). This is equally supported with the fact that their

features fascinate students. In effort not to be left behind by the opportunities created by electronic information resources, students work hard to adopt the latest skills and techniques required for their maximum usage of electronic information resources for their academic works and challenges in the universities. It is important to note at this juncture that the undergraduate students at the university level use electronic information resources and services much more than any other category of students in the university. This is because they are presumed to be computer literate, considering the impact of the computer age on them (Oyedeji, 1996). This is supported by Scoyoc (2006) in their opinion that the vast majority of undergraduates of all categories turn to the computer services like the internet for their academic works. Also, in support of this notion, Schayan (2001) stated that "the way undergraduates who were once used to read through books page by page have now turned to the internet for their academic needs is unimaginable". Ezeji (2008) reiterated that undergraduates of all categories in one way or the other use computer and other electronic information resources for their academic work. According to Levine-Clark (2006), he stated that undergraduates of both sexes in one way or the other cherish electronic information resources and internet services much more than any other category of students in the university.

Studies by different scholars have no doubt revealed the attitude and perception of student respondents in their utilization of e-information resources. In a study by Silas (2012), in his study of student attitude to electronic resources stated that in his study of 503 students of Andrews University, Michigan, USA, a great number of the students (87.9

percent) surveyed did not adopt the-resource type. Similarly, a familiar result was found by Folbet, (2011). They observed that 35.5 percent of the students surveyed were not aware of the e-book materials. According to Jones (2008), "e-information resources present enormous information, but unfortunately, users are understandably unaware of the availability of eBooks in the collection. So when eBooks show up in search results, it often occurs as a surprise – in most cases (nearly all, at first) the eBook would be seen as an alternative to the printed resources." Also, the e-Brary's (2008) study, stated that14% respondents stated that their awareness level of e-information resources was "excellent", and 54 %was "good". Thirty seven % specified that it was below satisfactory. However, 57% specified that they did not know how to locate e-books. Nicholas (2008) noted that "the demand for e-textbooks to support taught course students in higher education are not currently being met and the scarcity of textbooks generally is a big point of concern for students". More poignantly, in the study piloted by Croft (2010), lack of awareness was themajor reason cited by the respondents for not utilizing e-resources. A total of 40.2 % of the respondents said they were unaware there were e-books in the library, while 26 % revealed that they did not know how to locate them in the library, and 6 percent that they were unfamiliar with these resources. Opposite results were also obtained by several researchers. Nariani (2009), who quoted Nicholas, (2008) reported that the majority (65.5 percent) of graduate students surveyed were aware of e-books and 76 percent had used them. In the same vein, Levine-Clark (2006) reported that there were nineteen other reasons why students are not buying electronic resources, including the fact that it is unreliable. Findings from the study piloted by Shelburne (2009) specify that 15% of the students interviewed are not interested in reading them from computer
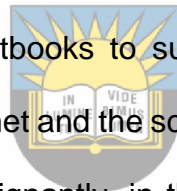
screens. Levine-Clark (2006) also disclosed that students and faculty complained that eye strain was a major explanation why print resources were preferred over digital formats. Furthermore, the outcome of the review conducted by Rowlands (2007) and also Nicholas, (2008) incontrovertibly validates that e-resources clearly compare very unfavorably with print titles for perceived ease of reading. In agreement with Rowland (2008) previous findings, Jamaliet, (2009) discovered that below 1 % of the participants in their study stated ease of use as a merit over e-books and hard copy. They also stated that the most hindering features of e-books is the challenge of reading them on-screen, and Ebrary (2010) disclosed that less than 15% of the interviewed users who responded to why they never utilized e-books, complained that e-books were too challenging to read. Difficulty to read and browse was also deduced as a reason for not utilizing e-books by 21.7 %of those who partook in the study piloted by Anuradha, (2006). Although this does is not imply an expressive figure, it is nonetheless, the reason most cited for not exploring e-books. In a study piloted by Chu (2003), the respondents revealed their displeasure with e-books claiming that they were difficult to read and browse or require specialized equipment. Also, Kropmanet, (1995) had already suggested that eye strain from computer screens can result in distress and could affect the choice of the respondents

E- Information resources have developed to a vital part of HEI collections and services; therefore, several relevant research have been done on attitudes towards exploring the utility of digital resources in their educational institution. Studies have addressed the two concepts of attitude and electronic resources. Alkhanak, (2011) discussed attitude in general as the individuals' responses in preferential ways as a result of their beliefs. The

precise definition related to this study was defined by Ngozi, (2014), who referred to it as the students' reactions to exploring digital resources on account of their beliefs, their assumptions, and people's sentiments. Moreover, Alkhanak, 2011) described student attitudinal behavior in the academic environment as the electronic resources evaluation in either positive or negative manners that influence the respondents learning process. Hence, the attitudinal behavior and perception toward the exploration of digital resources is simply the propensity that the student adapts either, positively or negatively, for using the digital resources of the library. However, Fishbein, (1975) disclosed that several concepts could be categorized under the concept of attitude, for instance liking, opinion, and satisfaction. On the other hand, the second concept of the study of EIR are what Radjagopal , (2012) defined as "material (data or programs) encoded for manipulation by computerized device, and this material may require the use of a peripheral directly connected to a computerized device". In addition, reviews and studies that addressed attitude and perception of electronic information concepts, there are empirical studies that have investigated the correlation between attitudinal behavior and perception of students, faculty, researchers, and librarians toward using the electronic resources, information services, and using the library. Ngozi, (2014) conducted a recent study that investigated students' attitude toward electronic resources. The study indicated that EIR were under-utilized in general because of the negative attitude of the students toward using the libraries electronic resources. Wu, (2012) piloted a study to comprehend the perception and management of digital resources, and established that students preferred using the library website and internet to recover significant materials. Furthermore, the major challenges encountered by students during the search process are the lack of ability to
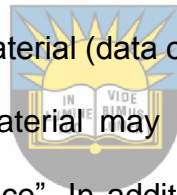
retrieve relevant material, on account of the ambiguous search methods, and slow internet connectivity, and this conforms to the theoretical framework that was utilized in this research.

3.9 CONCLUSION

Chapter Three provided a review of the core argument of this study is that ICT literacy skills and demographic factors influence the under-utilization of the electronic resources among the undergraduate students, and this conforms with the reviewed literature by scholars that have been quoted in this research, which also leads to the total findings of this study, as well as sourced literature from different studies related to the subject under study. The literature studied was organized thematically using themes gleaned from the models supporting the study, the research objectives and the broader aspects of the study. The following issues were discoursed: Accessibility of Electronic information resources among undergraduate students: Cases of Universities of Fort Hare and Rhodes, Influence of ICT literacy skills on the exploitation of digital resources among undergraduate students, the use of electronic information resources among undergraduate students, the impacts of demographic factors on the exploitation of digital resources among undergraduate students, and attitudes and perceptions of undergraduate students towards electronic information resource utilization. The requirements of this chapter were fully unpacked with the application of the theoretical framework adopted for this study, namely TAM, TRA and DOI. The theories expatiated

on the significance of awareness, belief, acceptance and adoption of e-resources use by the undergraduate students in order for them to derive optimum satisfaction in their utilization of these resources. This statement is also reinforced in literature by the scholarly works of investigators in related studies.

In the selected Eastern Cape universities, (i.e. Universities of Fort Hare and Rhodes), reviewed literature reveals that ICT literacy skills and demographic factors determine the use of electronic resources among the undergraduate students. The literature reviewed so far revealed that of all the electronic resources, there is an important impact of gender on the use of electronic resources, females tend to have anxiety and depend on the use of e-resources, while males are self-assured. Also, literature has revealed that age serves as a determiner of e-resources use among the respondents, as the older students tend to express anxiety and lack interest in their use of e-resources. The extensive utilization of this technology has effects for learning, studying, ICT capabilities and the services offered by the HEIs. In the 21st century, it is easier for the respondents to witness greater achievement in their academic work, since learning is personalized and customized. However, this implies a huge change in the format as well as on the competences of the population been studied. It is on this premise that a clarion call made for university management to create more awareness on the utilization of digital resources and its influence on academic achievement of the respondents. Furthermore, there is the need for the universities to build capacity of the undergraduate students through training and re-training programmes, provision of improved internet connectivity, ICT infrastructures, orientation on their perspectives regarding electronic resources use, and the provision of the required student funding for successful academic work. The succeeding chapter,

therefore, (i.e. the forth chapter) clearly elucidates the methods employed in guiding this research, such as the sampling methodologies, data collection and analysis are illustrated to fulfil the study objectives.

CHAPTER 4

RESEARCH METHODOLOGY

4.1. INTRODUCTION

This study was devoted to the empirical authentication on ICT literacy skills and demographic factors as determinants of electronic resources use among undergraduate respondents in the selected Eastern Cape universities in South Africa. The previous chapter provides a theoretical; framework for the study, namely TAM, TRA and DOI and its impact in charting a research direction for this study. This chapter agrees with the researcher's thesis framework, firstly, due to the fact that it helped the researcher to do justice to the study objectives through the collection, processing and analysis of data, so as to achieve the overarching aim of this research. Secondly, the adopted research methods were aligned to the theoretical framework and total research findings, which involves the under-utilizing of electronic resources among the respondents due to the fact that they were not too aware, believe nor accept technology as regards the ICT literacy skills and demographic factors of the respondents. The methodological positioning implemented for collected data was aligned. In a bid to ensure legitimacy, veracity, integrity and generalizability of research outcome, the base for the choice of research design is herein discussed. The research methods adopted for this study, as it helped to unpack the total findings of this thesis, giving a synopsis of the adopted procedure and the selected methodology employed in data collection for this research venture. The

plethora of research instruments adopted for this study were the research paradigm, survey questionnaire, research design, population of study, sampling procedure, data collection procedure, and interview schedule. Others include data analysis strategies (qualitative and quantitative), observation, document review and the reality and validity techniques, ethical considerations and conclusion. The present study therefore implemented the survey design, as it presented the best option for the acquisition of appropriate data so as to unravel the objectives of the study. The use of the survey by previous scholars pursuing similar objectives validates this choice. Subsequently, research instruments, scales and sub-scales that unavoidably go along with the survey were established. Preliminary analysis shows that the research instruments adopted were dependable and reliable, and therefore, they are justifiable for the methodological orientation implemented. All these aforementioned research methods have contributed to the core argument of this chapter, as it is the engine room of this study because the research instruments adopted helped to provide answers to the study objectives, so as to achieve the general findings of this thesis. This chapter therefore discusses how the methodology adopted for this study was operationalized, and is extensively discussed below.

4.2 RESEARCH PARADIGMS USED IN THIS STUDY

There are basically two research paradigms in the social science research namely the positivist and interpretivist paradigms (Cresswell, 2000). For the purpose of this research, the interpretivist approach was adopted, due to its relevance in the social sciences, as it made use of the mixed method technique in the analysis of this study.

4.2.1. Interpretivist Paradigm

Theorists have opined that attitudinal behavior differs significantly from variables from scientific study which can be easily regulated or controlled. It is on this premise, therefore that interpretivists are of the opinion that human attitudinal behavior is multi-faceted and cannot be determined nor influenced by pre-defined scientific or probabilistic models. Human behavior is thus influenced by numerous factors which are substantially subjective or biased in nature. Therefore interpretivists consider studying human behaviour in the daily life rather than in the controlled environment. To summarize interpretivism, Gathano, (2009) disclosed that interpretivism is therefore governed by subjectivity on account of human factor, and studying human behavior in a real-life setting, which is aligned to the theoretical framework of this study. This paradigm represents reality, having its own values and it is an essential prototype which provides explanation, geared towards the emancipating and developing knowledge frontiers.

4.3 RESEARCH METHODS

The methods adopted in this research refer to actions that were taken to scrutinize the research problem and the rationale for the application of detailed procedures and techniques used to pinpoint and analyze information applied to conceptualizing the research problem, thereby, allowing the researcher to critically assess a study's overall veracity and reliability. The methodological approach of this research provided answers two main questions: How was the data collected or produced? how was it evaluated?

Together in Excellence

4.4 METHODOLOGICAL APPROACH

In the course of undertaking this study, the researcher carefully selected the methodology employed in this research. In the present study, the qualitative approach was used to determine how ICT literacy skills and demographic factors influence the electronic resources use among the undergraduates of Universities of Fort Hare and Rhodes. The quantitative research approach was also applied because it allowed for quantification of the variables used in this study, (as supported in literature by Aramide, 2015; Ladipo, 2015). It is imperative to collect quantitative and qualitative data in order to compare and

contrast questionnaire results from the interviews, research observations and reviewed documents so as to enrich the data, and thereby assisting the researcher to complete and substantiate the research results on ICT literacy skills and demographic factors as determinants of electronic resources use among undergraduates Abu-Obaideh, (2012). The data obtained for this thesis was derived through self-administered questionnaires survey of and interview schedule, with the determination of generalizing perception and opinions from the study population, which are the undergraduate students in the selected universities. In conformity with this, Gathano, (2009); Olatokun, (2009) explained the significance of adopting multi-methodology for studying ICT literacy skills and demographic factors as determinants of electronic resources use among university undergraduates using the interpretivist paradigm. The topics discussed in this chapter are the target population, research design, sampling techniques, the sample size, research instruments, data collection/analysis, ethical considerations adopted to carry out this research.

4.5 RESEARCH DESIGN

The sample was considered adequate because the research aimed at adding to existing knowledge on ICT literacy skills and demographic factors as determinants of electronic resources use among undergraduates in selected Eastern Cape universities. The study used survey design. The survey design adopted in carrying out the findings involved the integration of quantitative and qualitative techniques. The choice of the selected Eastern Cape universities was decided on the premise that the respondents in both universities are homogenous in nature with diverse cultural backgrounds (e.g. White, Xhosa, and

Afrikaans). The differences in their histories and their structures would suggest that they have different backgrounds in terms of ICT literacy skills and demographic factors on electronic resources use.

4.5.1 Survey Research

This is a universally used technique of gathering information from a population of interest, hence, the reason for its use in this study. The two main features of the survey design adopted in this study, are:

- **Questionnaire** -- a predefined sequence of interrogations designed for the purpose of retrieving information from selected individuals or groups.
- **Sample Survey** -- a procedure in which a subcategory of the population is chosen to answer the survey questions; the information collected can then be generalized as the opinion of the entire study population. Furthermore, the sample survey technique was adopted because it is cost-effective and well-organized means of gathering information about a population. Also, Survey sampling makes it possible to precisely approximate the features of a target population without interrogating all members of the population. Survey sampling is particularly useful when the population of interest is very large or distributed across a large geographic area.

The present study employed a survey research design in examining ICT literacy skills and demographic factors on electronic resources use among the undergraduates in the selected Eastern Cape universities. The survey method used in this research employed statistical procedure to analyze numerical information so as to ascertain levels of

correlation among identified variables in this study and allowed conclusions to be drawn. The Universities of Fort Hare and Rhodes are located in Alice and Grahamstown respectively. The survey method was thus cost effective and appropriate for collecting data for the study. Also, questionnaire were administered with interrogations assessing the ICT literacy skills and demographic factors as determinants of electronic resources use was employed to obtain quantitative information, and a five-point Likert measurement of questions was employed to determine how the respondents agreed with the questions given. Also, a designed schedule of interview questions was provided to obtain qualitative information from the undergraduate students in the selected institutions.

Since the universities are situated in different parts of Eastern Cape, the survey technique was considered suitable for data collection, with undergraduate students targeted as the focus population of study. In this regard, a survey was employed to select respondents (undergraduates) in the Universities of Rhodes and Fort Hare. Related researches have engaged the survey methodology to study ICT literacy skills and demographic factors on electronic resources use (Gui, 2007; Obura, 2008; Herring, 2010; Quadri, 2013; Ilogho, 2014; Adekannbi, 2016).

4.5.2 Quantitative and qualitative research methods

The quantitative research technique is an objective technique that depends heavily on statistical procedures in its analysis, whereas, the qualitative technique is largely subjective, in nature. Quantitative methods involves calculating and quantifying events and performing statistical analyses of a body of numerical data (Schultz, 1996). The main

focus of the quantitative technique is to ensure reliability, generalizability, and validity when predicting causes and effects of human actions (Cassell, 1994). Quantitative research, according to Stangor (2011), is a technique that involves the description of human subjectivity through the use of prescribed measures such as attitudinal behavior, beliefs, intentions, and integrating opinions from questionnaire and systematic observation of behavior which is statistically analyzed. On the other hand, quantitative techniques involves the quantification of variables garnered during field exercises, whicg are then analyzed and presented as tables, percentages and in numerical formats (Babbie, 2010). The quantitative research approach was employed by Haddow (2013) in the study of electronic resource use. The approach was also used by Kassangoye, (2013) on the study of electronic resources among students for implementing studies on closed surveys (Myers, 1997). Quantitative investigation is related to empirical and rational underpinnings (Babbie, 2010), which stresses reliability and generalizability of research, derived from limited sample of the focus population and generalized to the general population from which the sample were derived. According to Ngulube (2009), a major merit of quantitative data analysis is that it reorganizes vast amounts of confusing data, and re-presents them as graphs or summarized numbers, thus adequately answering the study objectives posed. (Babbie, 2010; Stangor, 2011). Nevertheless, quantitative research has its own shortcomings. Quantitative research makes use of experimentations, yet social processes observed in a research laboratory environment may not necessarily be true representations of happenings in the real-world.

4.6 POPULATION OF STUDY

After identifying the unit of analysis, the researcher identified the target population, which is defined as the research group that the investigator drew research conclusions about, i.e. the undergraduate students in University of Rhodes and Fort Hare. In this study, an undergraduate is defined as a student of the university who is undergoing training in different fields of human endeavor with the aim of acquiring bachelor's degree and honors qualification. The populations for this study are undergraduate students in the selected HEIs for this study. These are undergraduate respondents who registered for a three or four year study, leading to the award of a diploma or Bachelor's degree (as illustrated in Table 4.2). The 100 level students were exempted from the study because they were still relatively new on campus when the data were being derived. In the Eastern Cape Province, four federal universities are established namely: University of Fort Hare (UFH); Rhodes University, Grahamstown (RU); Walter Sisulu University (WSU); and Nelson Mandela Metropolitan University, (NNMU). According to Powell (1997), the study population should be nominated cautiously, with due consideration for the criteria for selection, the preferred sample size and strict adherence to other parameters and procedure required for the survey. In light of the above, University of Fort Hare (UFH) and Rhodes University (RU) were selected. The UFH has an undergraduate enrolment of approximately 12, 500 (UFH Institutional Planning Office) and Rhodes University has approximately 5,600 undergraduate students (RU Office of Institutional Planning). In choosing these institutions, the researcher considered those that were formerly historically advantaged institutions and historically disadvantaged institutions, hence one

formerly disadvantaged institution and one formerly advantaged institution were selected for the study. "Historically Advantaged Institutions" (HAIs) and "Historically Disadvantaged Institutions" (HDIs) are terms used in describing the distinct split along racial and ethnic considerations of the HEIs, as set out in the apartheid policy (1959), which created separate universities for the different African ethnic tribes (such Zulu, Tswana, Sotho, etc.) and for colored and Indian populations (Odhav, 2009). Such engineering is intended at limiting historically black universities to institutions of teaching. The HDIs were deprived by their low level of capacity development, low level of research (because they were not planned to be research institutions), rural locations, thus placing them at the margins of the South African economy by their inadequate financial and other networks while the HAIs were larger and older "liberal" English HEIs that were well endowed on account of their urban location, historical networks, links to business opportunities, alumni and capacity for research (Odhav, 2009), such as Rhodes University.
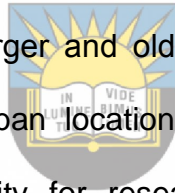
The entire student population of 18,100 in the selected universities was too massive to be studied within the time frame in which this study was programmed to be accomplished, hence the need to select a representative group (sample).The distribution of study population in table 4.1 has been detailed in table 4.2.

Table 4.1:   Analysis of Study Population

University	No of Students surveyed	Source of Data	In-depth Interview
Fort Hare	260	Questionnaire	6
Rhodes	117	Questionnaire	4
Total	377		10

4.7 SAMPLING PROCEDURES

The probability sampling method was utilized for this study. This technique was utilized because every participant in the wider population had equal chance of being selected in the sample. The sample size for this study was determined based on the expense of data collected, as well as the need to have sufficient statistical power. The present study used a total of 377 undergraduate students surveyed and ten interviews. Probability sampling method, is the most appropriate technique for any academic research in this regard (Weisberg, 2005). There are two basic options open to a researcher desiring to obtain information about a population (DeMarrais, 2004). These are a census or a sample. Babbie (2007) stated that a sample as any percentage or ratio of the general population which is understudied. In order to obtain reliability of the research outcome of this study, there was need to sample. The sample was a microcosm of the entire population and comprised undergraduate students at two Eastern Cape HEIs. Data collection began in

February, and universities opened for the new academic session in January. The study implemented the stratified sampling procedure. This multifaceted sampling approach begins with the division of the population into sub-divisions as follows:

☐ Sub-division 1: Faculty of Social Science & Humanities/ Arts (SSH/Arts);

☐ Sub-division 2: Faculty of Science & Agriculture;

☐ Sub-division 3: Faculty of Law;

☐ Sub-division 4: Faculty of Education; and

☐ Sub-division 5: Faculty of Management & Commerce

Phillips (1981) proposes that the respondents, who should have some definite criteria to be selected, should not be randomly selected on considerations of specific status, experts in the area of research focus and must be accessible to the investigator. A total of five undergraduate degree programmes were arbitrarily chosen from the sub-divisions accordingly. The process of selection also took into cognizance the common curricula to both UFH and RU. Also, information was sought from the Planning Offices of both HEIs, and the researcher was provided with the document showing the number of registered students, which sum up to a total of 11416 undergraduate students who enrolled for the 2017 academic session. Therefore, it is on this premise that the the sampling frame was selected. (Babbie, 2010).

For this study, the undergraduate degree programmes selected are: LLB (Bachelor of Laws, Faculty of Law), BSc (Bachelor of Science, Faculty of Science & Agriculture), B.Ed. (Bachelor of Education, Faculty of Education) Faculty of Social Science & Humanities/Arts, BCom (Bachelor of Commerce, Faculty of Management & Commerce/
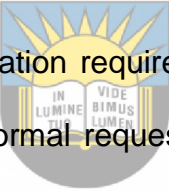
Economic Science) and BA (Bachelor of Arts). The Raosoft sample size calculator was employed to ascertain the suitability of sample size to be adopted. MacIntosh (2006) stated that the Raosoft sample size calculator implements standard statistical formulae to determine sample sizes for a given confidence level for attribute sampling. McCrum-Gardner (2010) and previous researchers (Adriaenssens, 2009; Olawale, 2010) have also implemented it in their research procedures. The population under investigation is the undergraduates that are enrolled at the University of Fort Hare, which has undergraduate enrolment of 12, 500 (UFH Institutional Planning Office) and Rhodes University which has undergraduate enrolment of 5600 (Source: www.ru.ac.za) giving a total of 18100 undergraduate students. On account of the large study population size, systematic sample techniques will be adopted. Calculations from the "Raosoft sample calculator" with the level of significance at 95%, 5% error margin, 50% response distribution and an ballpark population size of 18100 yielded 377 participants as this study's sample size. This will be proportionally distributed among all the faculties common to both universities.

Table 4.2: The Sample size, Faculties and Population of the Selected HEIs

Name of University	Faculties	Degree Programmes	Population	Sample Size
University of Fort Hare (UFH)	Law	LLB	2,037	49
	Management & Commerce	B.Comm	3,587	68
	Education	B.Ed	4486	86
	Social Science & Humanities	B.A	1059	25
	Science & Agriculture	B.Sc	1331	32
	SUB-TOTAL		*12,500*	*260*
Name of University	Faculties	Degree Programmes	Population	Sample Size
Rhodes University (RU)	Commerce	B.Comm	885	18
	Education	B.Ed.	1681	37
	Humanities	B.A	894	19

	Pharmacy & Science	B.Pharm	942	19
	Law	LLB	1198	24
	SUB-TOTAL		*5,600*	*117*
	TOTAL (UFH & RU)		18,100	377

4.8 DATA COLLECTION PROCEDURE

Gaining access to the study population required seeking ethical clearance, as well as seeking official approval through formal request to conduct this investigation. In doing justice to this, the researcher specified the nature of the research stating exactly what the overarching aim and study objectives of this study. In this research, permission was sought, and approval given in order to gain access to the respondents in UFH and RU. Before the researcher made a visit to any research site, an appointment was scheduled in both universities. At the Universities of Fort Hare and Rhodes, the researcher was provided with a list of all the undergraduate programmes in the selected institutions. Several research tours were made for the resolution of conducting interviews with the respondents because the interview schedules were prescribed for different dates. The data collection and in-depth interview commenced on 12 February, 2018 and ended on 8 May, 2018. Data collection was done by distributing and collecting the survey questionnaires.

4.8.1 Survey Questionnaire

The researcher distributed copies of the questionnaire, which are printed documents that contain guidelines, enquiries and statements that were accumulated in order to obtain answers from the undergraduate students of the selected higher education institutions. In literature, many surveys have used self-administered questionnaire in their quest to provide answers to their research findings on ICT literacy skills and demographic factors (Adetimirin, 2006). The merit of adopting questionnaire is to ensure that the rights of respondents are strictly ensured, whether they decide to respond or otherwise, and responses are supposed to be strictly confidential and anonymity of respondents should also be guaranteed throughout the course of the research. All the undergraduate students filled copies of the questionnaire before the commencement of the interview schedules. As supported by Babbie (2001), the survey questionnaires were apt and suitable, as the population under study possessed satisfactory levels of literacy, since they all possessed the minimum of matriculation requirements as prerequisite for admission into the HEIs. A total of 377 questionnaires were distributed as follows: 260 at UFH and 117 at RU. The researcher ensured that more copies of the questionnaire were issued at UFH on account of the HEI's larger population and sample size when compared to those of RU. A questionnaire with seven sections was prepared. The narrative of what is contained in each of the sections of the questionnaire is given in the appendix. **Section A** comprised the demographic bio-data of the respondents (and this is exclusive of identifiers of specific individuals). Examples include the name of the HEI, department, year of study, gender,

age, highest level of education and level of income. Lee (2006) posit that demographic variables affect the user of electronic resources. **Section B** had questions on the access, types and purposes of electronic resources. **Section C** of the questionnaire contained questions on levels of ICT literacy skills. **Section D** contained questions that targeted on problems encountered as well as the general attitudes and perceptions of undergraduate respondents' e- resources utilization. Further, this research utilized the five-point Likert scale in the measurement, evaluation and assessment of the questionnaire items relating to ICT literacy and electronic resources use. The Likert scale, as defined by Pickard (2007), is epitomized as the bipolar scaling technique, which allows respondents to select a choice that best demonstrates their level of agreement with a given statement. The statements in each were a reflection of the information required to unearth the research situation for this thesis. The benefit of using a five point-Likert scale in this study is that the responses are organized randomly, by mingling both positive and negative statements in a bid to prevent respondents from making choices on the columns they wish to fill. This position is also supported in literature by Pickard, (2007).

The in-depth interview had open- ended questions, where respondents exercised their freewill in giving their own opinions. Similar previous studies used this technique to assess ICT literacy skills and demographic factors among undergraduate students (Bruce, 2002; Ehikamenor, 2003; Bundy, 2004; Shuling, 2006; Ahiazu, 2008; Azubike, 2016). This is further discussed below.

4.8.2 The Schedule of In-depth Interview

The Schedule of In-depth Interview was adopted to retrieve relevant data from the undergraduate students in both institutions. Undergraduate students were selected because they under-utilized their ICT literacy skills and they are easily influenced by their demographic factors in the use of the electronic resources available for their research.

Interviews are a methodical ways of communicating and receiving feedback from people. Kvale (2007) regarded interviews as: an exchange of communication among two or more people on a subject of shared concerns. It is on this premise that the researcher piloted face-to-face in-depth interviews with the undergraduate students, who were asked to answer questions relating to ICT literacy skills and demographic factors of undergraduate respondents on their utilization of e-information resources (see Appendix 2).

The researcher scheduled an appointment with the undergraduate students through the Registrar and personally at UFH. The interview guide/schedule was made available to the respondents' minutes before the actual interview, in order for the interviewees to be prepared. Further, a total of 10 face-to-face interviews were conducted with the undergraduate students (6 at UFH and 4 at RU). The researcher obtained the consent of the respondents to record the conversations of the researcher and the interviewees before embarking on the sessions of interviews. The undergraduate students' views were then recorded by using a voice recorder, and thereafter transcribed. As proposed by Bliss, (2006), the scheduled in-depth interviews were established on a set of fixed questions which are asked sequentially. The structured interview is chiefly used within social

sciences research for both qualitative and quantitative research (Bryman, 2004). Kelly (2006) proposes that an interview should not exceed 20 minutes to an hour and a half because people find it challenging to concentrate much beyond that. From the foregoing, Interviews for this study lasted between 20 and 60 minutes. During interviews, interruptions from friends, and calls on mobile phones were usual occurrences that frequently disturbed the interview sessions.

4.8.3 Document Review

A document review used in this study involved an appraisal of relevant resources significant to this research. These resources included existing databases of information, manuals, programme files and policies relevant to this research. The assessment of empirical literature formed a portion of the qualitative data that was garnered on ICT literacy skills and demographic factors of this study.
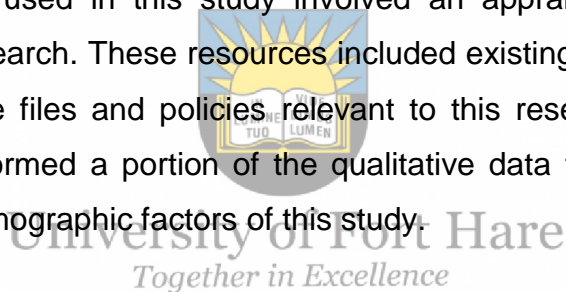
4.9 THE RATE OF RESPONSE

(Stangor, (2011) explained the rate of response as the fraction or proportion of respondents who completed and returned copies of the questionnaire to the investigator Of the administered **377** questionnaires, **19** were unusable, **92** were returned, while **266** copies were usable, thereby generating **70.6%** as a general rate of response. In order to prevent likely lower and non-response rates that could negatively affect the outcome of the survey, it was expedient for the researcher to obtain data at the beginning of the semester. This was good timing because students had just resumed, and registration was over. Questionnaires were administered to respondents at the School Café, Students' Residences, students centre, departmental lecture rooms, the University libraries, entrance at both institutions surveyed. A box was provided for drop off after completion and at lecture venues before and/or after lectures.

Table 4.3:   Response Rate by Institution

School	Questionnaires administered	Usable Questionnaires	% of respondents
UFH	260	163 (61%)	61
RU	117	103 (88%)	39
TOTAL	**377**	**266**	**100**

As shown in Table 4.3 above, 163(61%) of the respondents are from University of Fort Hare (UFH) while 103 (88%) are from the Rhodes University (RU). The overall response rate was 70.6 %. UFH had more respondents because of its larger population, and sampling was done proportionately.

4.10 ADOPTED APPROACHES FOR DATA ANALYSIS

The data collected was structured, and analyzed with the adoption of quantitative and qualitative techniques, the quantitative and qualitative methods complemented each other to produce the required results for this study. The demerits of one method could be covered by the merits of the other and vice versa.

4.10.1. Reliability and Validity

David, (2004) defines reliability is the level to which a phenomenon is measured and consistently put to test is over time. Reliability is about constancy and consistency (Neuman, 2006). Instrument validity is the degree to which a test tool accurately quantifies what it is expected to measure and quantify (Crocker, 1986), or the parameters to which a research instrument maximally captures the underlying, unobservable construct it is meant to quantify (Cambell, 1959). Key procedures were carried out to ensure validity of the data utilized. The researcher ensured that validity of the research instruments (which determines the suitability of the features guiding the study), was accomplished, since most of the survey questionnaire sections were largely fashioned and modified to suit this study. Questionnaire items were mainly derived from comparable studies in literature, where the scale items were statistically tested to ascertain validity. This point of view is also supported by Burns, (2010). Issues related to ICT literacy skills, demographic factors, electronic resources, attitude and perception towards the use of electronic resources were determined from relevant literature such as Oliver, 2002; Miltwa, 2004; Luambano, 2004; Oblinger, 2005; Mukangara, 2007; Ogwu, 2010; Adetimirin, 2011). The researcher also utilized the factor analysis technique to validate the reliability of research instruments, this viewpoint is supported in literature by Brewer, (2000), and the numerous items that representing each research element were statistically fabricated and analyzed, thereby ensuring that they were appropriately assigned to the right scale (Moustaki, 2008). Also, validity of research methods and instruments was achieved by connecting

theoretical variables to research instruments, as illustrated in Table 2.1 in the subsequent chapter.

In order to ensure reliability and ascertain veracity while processing/analyzing field data collection tools, Lescroel, (2014) encouraged that the questionnaire should be pre-tested for the purpose of that the contents of the questionnaire were essential, suitable and satisfactory for the research (as supported in literature by Polit, 2004; Krishnaswami, 2010; Dewah (2011); Chigada (2014) and also lessen or totally eradiate biases emanating from the utilization of research instruments or the methodological machinery. (David, 2004). From the foregoing, 10 college students of Lovedale College, Nstelamanzi, Alice, were randomly selected so as to achieve this research feat. Their input in the questionnaire was incorporated to reflect the useful submissions and suggestions that the respondents provided .The questionnaire was therefore enriched and amended, based on the feedback received from the Lovedale College students. Also, in order to further ensure the dependability of the questionnaire used in this study, Cronbach's Alpha was adopted to determine internal consistency, and this was done to ascertain test-retest reliability of research methods, instruments and the overall reliability of the research variables and elements, as opined by Nunnally, (1994).

4.11 ETHICAL CONSIDERATIONS

The researcher obtained approval from the designated ethics officials at UFH and RU respectively. The Universities of Fort Hare and Rhodes ethics policies were complied with. The UFH and RU undergraduate respondents were duly informed that their

involvement in this research was not compulsory, but voluntary and that they could exercise their right to pull out from the study at any time without any consequences. This procedure is in conformity with the submission of Granidal (2009), who disclosed that interviewees were free to participate in a research being informed of the research details which may likely influence their decision- making. In the same vein, Pickard (2007), stated that informed consent is "part of an agreement between the researcher and the participant that creates a mutual understanding that remains constant throughout the research". As supported by Cohen, (2011), "informed consent is a cornerstone of ethical behaviour as it respects the right of individuals to exert control over their lives and to take decisions for them". The challenges encountered by the researcher while interviewing respondents were that some of the respondents were impatient, others complained on the lengthiness of the questionnaire, while some others completely ignored the researcher. As regards the questionnaire, the first questionnaire that was used were inadequate in providing the necessary questions on ICT literacy skills, and hence, the analysis of such data would be cumbersome, and would not bring out the total findings of the study. On account of this, another well- detailed questionnaire was drawn which included the missing components required for this study. Further, from the 377 copies of administered questionnaire, a total of 266 copies were analysed. Hence, 111 copies of the administered questionnaire could not be retrieved by the respondents, because some copies were lost. Other copies were not properly filled, and hence the use of such questionnaire was unnecessary so as not to compromise the validity of research results.

4.12 CONCLUSION

This research aimed to decipher the concept of ICT literacy skills and demographic factors as determinants of electronic resources use among undergraduates in the selected Eastern Cape universities. A deductive methodological orientation was adopted, given the existence of broad literature upon which the study hinges upon. Furthermore, a survey design was adopted after an investigation of the study objectives on the basis of guidelines as provided in existing literature. In conformity with the adoption of the survey design, suitable research instruments namely the questionnaire, in-depth interviews, scales and sub-scales were developed to measure variables. In addition, as expected in the research survey, results were coded, analyzed and interpreted using parametric and non-parametric tests, depending on the nature of variables. The Cronbach's Alpha also showed that all scales and sub-scales, as well as the questionnaire utilized were valid and therefore reliable. These instruments were therefore used with strict adherence with the University of Fort Hare and Rhodes guidelines and requirements relating to ethics of research, the strict compliance which enabled the researcher to manage difficulties that emanated in the course of this research. The methodology, research instruments and statistical techniques adopted in this study all combined to bring about the desired research results, and this made it possible to formulate a rich core argument which is in line with the total findings of the study that ICT literacy skills are under-utilized among the respondents in the study areas. The demographic composition of the respondents was also presented in this chapter. The next three chapters (i.e. chapters 5, 6 and 7) analyze the data that was collected on ICT literacy skills and demographic factors as determinants

in the utilization of digital resources use by undergraduate students in selected Eastern Cape HEIs. The decision on the survey design piloted the actual field work, and culminated in the data collected, which is clearly elucidated in the next three chapters. Chapter five analyzed field results centered on demographic factors as determinants of accessibility and utilization of digital resources among undergraduate students in the selected HEIs, which are presented to unpack the study objective four, while chapter six addresses the study objectives one and two, which is based on the analysis on ICT literacy capabilities which influence electronic resources utilization among undergraduate respondents in the selected institutions. Furthermore, chapter seven unravels the analysis of study objectives five and three, which is encapsulated as attitudes and perception of undergraduate respondents regarding their utilization of digital resources in the selected institutions. These results are discussed within the purview of the empirical literature.

CHAPTER FIVE

DEMOGRAPHIC FACTORS AS DETERMINANTS OF UTILIZATION OF E-INFORMATION RESOURCES AMONG UNDERGRADUATE STUDENTS IN THE SELECTED UNIVERSITIES

5.1 INTRODUCTION

This chapter contains data presentation and discourse on the research findings based on the broad and specific objectives of this thesis. The core argument of this chapter is that demographic factors (which includes age, gender, language) have an impact on the accessibility and utilization of e-information resources by the undergraduate students in the selected HEIs in the Eastern Cape affect the use of electronic resources. This can be seen in tables 5.1, 5.2 and 5.3, and this brought about the total findings of this study. Hence, the demographic factors, accessibility and utilization of e-information resources are of particular importance to making an informed judgment and conclusion in this study. As reflected in chapter 1 above, Personal demographic variables have the effect on the utilization of digital resources. In this premise,, scholars found that, personal demographic

variables as age, income level, gender, professional qualification, country level have the significant role on the exploitation of digital resources (Mufutau., 2012; Goodson, 2001, which brought about the findings of this chapter. Also, the theoretical framework used in this study is opined on TAM and DOI theories.

The presented findings in this chapter argues that TAM and DOI determine the demographic factors of undergraduate students towards their access to electronic resources. TAM and DOI are suitable in examining awareness and acceptance of technology among users (Venkatesh, 2003; Davis, 1989. The main focus of these theories is to explain the attitudes, behaviour, influence and adoption of the undergraduate students in accessing electronic resources through various locations such as residences, university library, university computer laboratories, home, offices and cybercafé.

From the outcomes of this research, the purpose of the undergraduate students when accessing electronic resources from different locations and its utilization as assumed by TAM and DOI is depicted in Table 2.1. Further, it is germane to note that access and awareness in the utilization of e-information resources is what motivates the undergraduate respondents; as their desire to use electronic resources is driven towards chatting, networking, videos, entertainment purposes, etc. which is not the primary reason why the universities provides the electronic resources. The chapter in addition to the subsequent two chapters (chapters 6 and 7), presents results from the field study.

In addition, the preceding chapter (chapter four) set out the method and methodology that guided the acquisition of empirical data to support the main thesis of this study that ICT literacy skills and demographic factors influencing digital resources utilization among undergraduate respondents in the selected Eastern Cape universities in South Africa. Also, the necessity for utilization of digital resources can also be academic related information (research education), course registration, to carry out course-related assignments. This point of view is also supported in literature by Tenopir, 2000; Rogar, 2001; Schulbert, 2001; Otolo, 2004; Adomi, 2004; Ray, 2016. Also, despite the fact that many undergraduate students are aware of electronic information, most of them still face challenges in the process of utilization and accessing them from different locations for their academic needs. This research objective sought to review the access from different locations and utilization of e-information resources among undergraduate respondents at the University of Fort Hare and Rhodes University. In the subsequent sections, the research outcomes are illustrated in tabular and graphical presentations, and the results are supported with theoretical and empirical literature.

5.2 CORE ARGUMENT OF THIS CHAPTER

The demographic factors has greatly influenced e-resources use among undergraduate students. These factors has much to do on the utilization of e-information resources in order to meet the information use of the respondents. The core argument should be greatly addressed so as to achieve the main purpose for which the university provides

these electronic resources. The utilization of e-information resources is aimed at exposing and meeting the needs pertaining to undergraduate students towards information through the electronic medium from various locations. The results from the research, as illustrated in table 5.1 indicated that three demographic factors were used for this study namely age, gender and language. The result revealed (in Table 5.1) that 129 (58.9% of the respondents) were males, while females were 90 (41.1%). This is due to the fact that males are more devoted and proficient in the adoption of e-resources than their female colleagues, and this assertion is also seen in Figure 5.6, that more males access electronic resources from their university/computer laboratories, offices, residences, homes, and other sources, as depicted in Figure 5.7, Tables 5.11, 5.15, 5.21 and 5.27 respectively, and this supports the views of the other empirical theoretical literature such as TAM and DOI that depict the assertion on the adoption and acceptance of technology. The theories (TAM and DOI) assumes that users had analytical validity for intending to use, adoption, self- described usage and attitudinal behavior towards technological use (Szajna 1994, Rogers, 1985). The theories used in the study predicts and explains technology in various situations and in studies of users' adoption of technology. In addition, the theories are applicable in explaining information systems research, and is widely used in the area of technological diffusion and adoption in educational settings. The main focus of the theory in this chapter is to explain the reasons why the female respondents are less receptive in the use of e-resources than their male colleagues. From the findings of the study, the goal of undergraduate students when using e-resources as assumed by TAM and DOI, is to satisfy their information needs and requirements (see

Table 2.1). Analysis of research findings from this chapter, which correlates with the core argument are aligned with the total findings of the study are elucidated below.

5.3. GENDER AS A DETERMINANT ON THE UTILIZATION OF E-INFORMATION RESOURCES

The factor of gender in the investigative use of electronic databases cannot be downplayed, for example, it was observed among high school students that the respondents' attitudes towards electronic resources use tended to vary by gender. Several studies have depicted that males have penchant for internet browsing as well as for leisure purposes, whereas, females utilize it for purposes related to work (Ford, 1996). Furthermore, a study of highly efficient students was conducted by Ford, and he discovered that "females experience challenges in locating online information, and tend to feel less proficient and in their utilization of e-resources, they also are less frequent users and to seldom use varied sets of e-applications of this resource than their male colleagues." (Ford, 2001). In the same vein, Majid (1999) disclosed a comparable result in his study of faculty members, when he posited that while males possessed better IT skills. Similarly, Shaw, (2002) stated that it is a common occurrence for the men to prefer web use to meet their informative and entertaining commitments, while women prefer to use e-resources for communication. Below is the table depicting the gender distribution of the respondents.

Table 5.1: Gender Distribution of the Respondents

Gender	Frequency	Percentage (%)
Male	129	58.9
Female	90	41.1
Total	219	100.0

The above Table 5.1 reviewed that 129 (58.9% of the respondents) were males, while the remaining numbers, i.e. 90 (41.1%) were females. Other empirical studies conducted that supports the findings of this research include Adomi (2000), who opined that more males were discovered to engage in the utilization of e-information resources than females. Below, Figure 5.1 depicts the gender of the respondents.
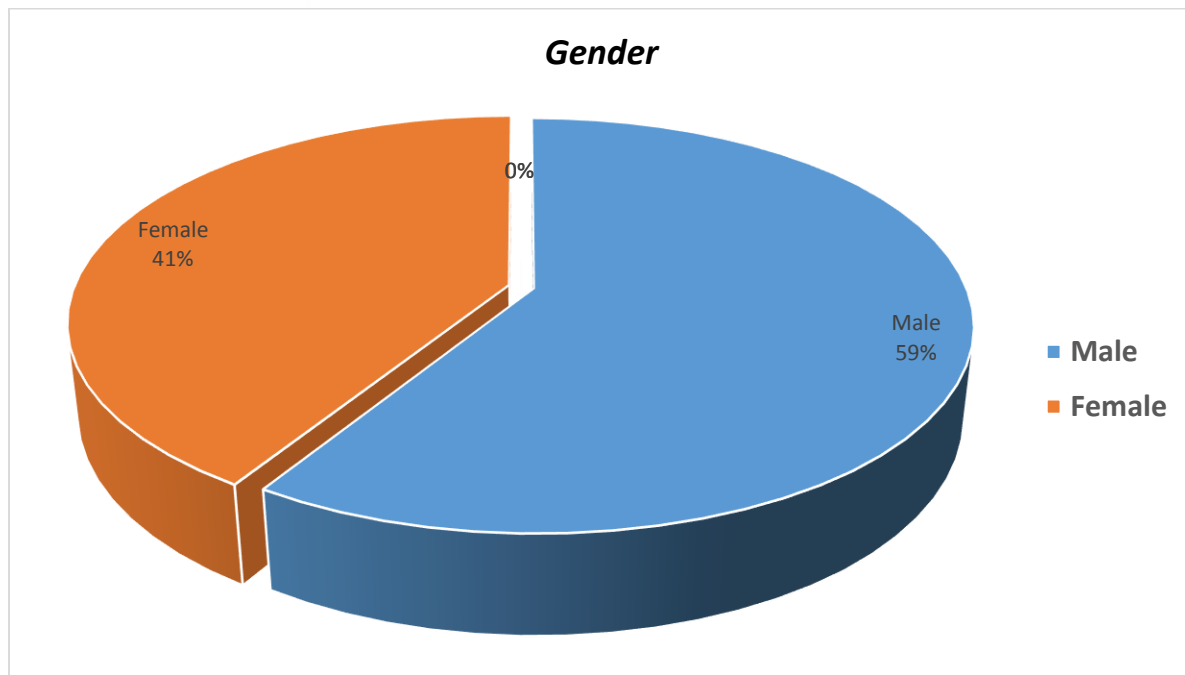
Figure 5.1: Pie-Chart depicting gender of respondents

5.3.1. Language as a determinant on electronic resources use

From this fieldwork, it was deduced that most of the surveyed UFH and RU respondents were Xhosas, and because they are the majority, this doesn't have influence on their electronic resources utilization. This is because English language is the main language of communication in the selected higher education institutions. In a study conducted by Ibrahim (2004), he revealed that the language of communication was English for 62 (51.4%) of the respondents; only 35 (28.1%) utilized Arabic and 27 (21.6%) of the respondents could effectively communicate in both languages. Below is Table 5.2 which depicts the language of the respondents.

Table 5.2:   Language of Respondents

English	36(15.1%)	Zulu	13(5.4%)
Afrikaans	4(1.7%)	Others (Specify) 6(2.5%)	
Xhosa	180 (75.3%)		

Of the surveyed students, the Xhosas were the majority, having a sum of 180 (75.3%), English were 36(15.1%), Zulus were 13(5.4%), other nationals (such as Nigerians,

Ghanaians, Ugandans and Kenyans) were 6 (2.5%), and Afrikaans were 4(1.7%). The figure 5.2 below depicts the language of respondents.
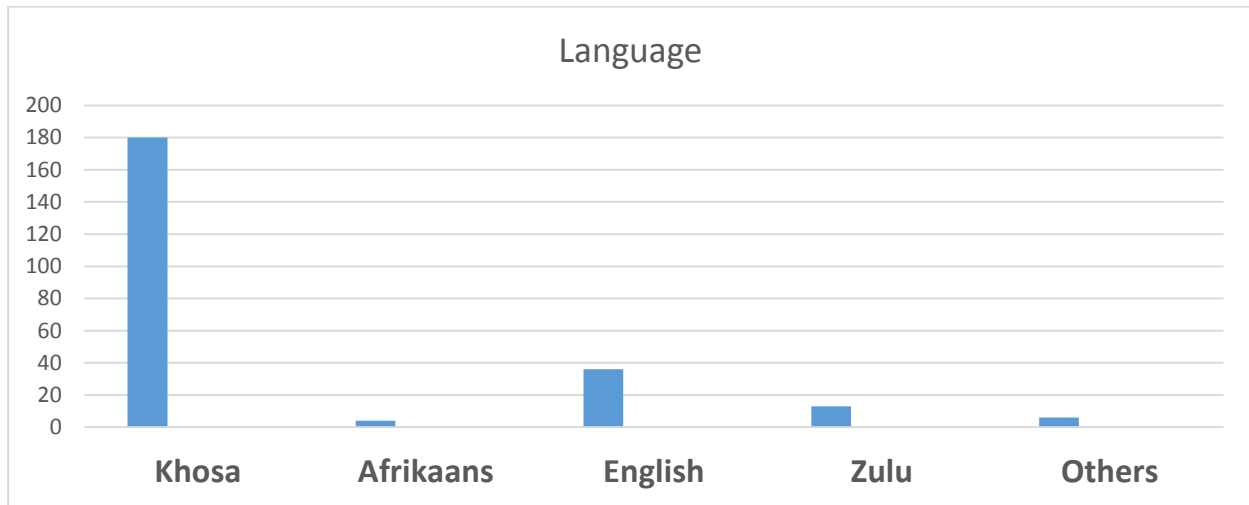
Figure 5.2: Bar Chart indicating Language of respondents

5.3.2 Age as determinant of electronic resources use

Age is one variable that is essential in the utilization of e-information resources. From the study, it was observed that the younger undergraduate students were in the majority in the utilization of e-information resources. Other empirical studies conducted that supports the findings of this research include Laguna, (1997) and Madden, (2000). Below is Table 5.3, which illustrates the age distribution of respondents.

Table 5.3:   Age Distribution of the Respondents:

Age Range	Frequency	Percentage (%)
20 years & Below	70	32.4
21- 30 years old	119	55.1

31- 40 years old	22	10.2
40 years and above	5	2.3

Table 5.3 depicts a preponderance of undergraduate students whose age range were between 21-30years old (119-55.1%), 70(32.4%) of them were 20 years and below, 31-40 years age range were 22 (10.2%), and 5 (2.3%) were above 40 years of age. In the course of this study, it was discovered that the 21 to 30 age group was highest in electronic resources use. The reason adduced for this phenomenon is due to the fact that most of the undergraduate students who are proficient in the use of electronic resources fall in this age category. Other empirical studies conducted that supports the findings of this research include Barllan, (2003). Below is Figure 5.3 which depicts the age of respondents.
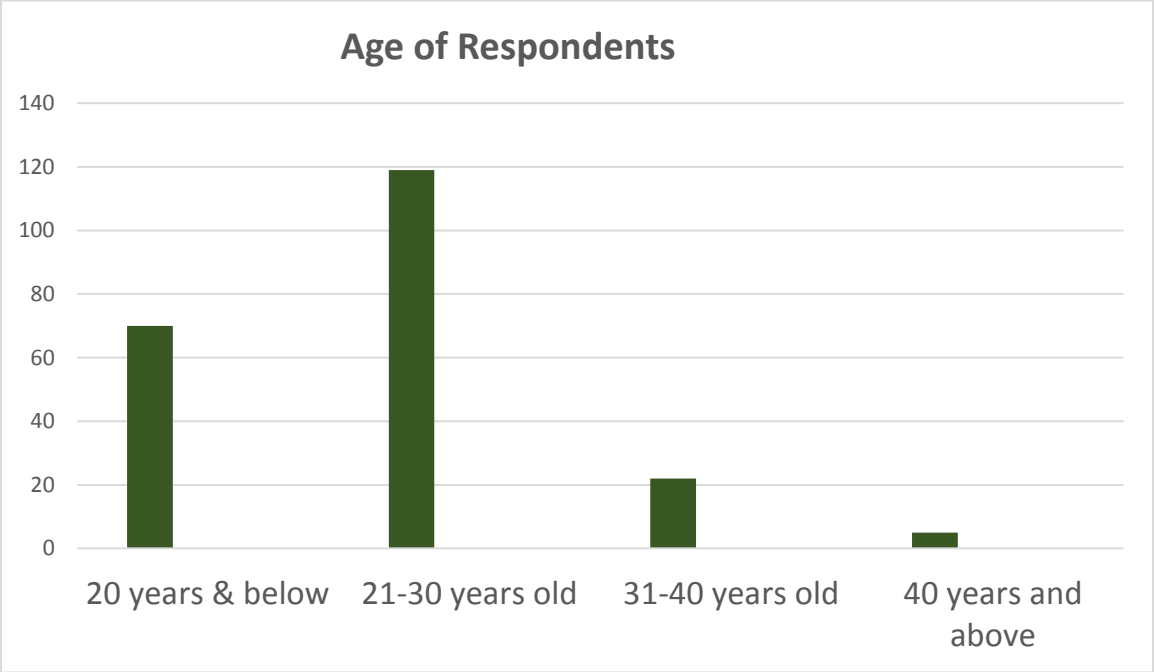
Figure 5.3: **Bar chart showing age distribution of the respondents.**

5.4 ACCESSIBILITY TO ELECTRONIC RESOURCES

The findings presented in this chapter and subsequent chapters support this argument. The electronic resources is mainly accessed by undergraduate students at the residences, and as many as 133 or 54.7% of the respondents make use of the Wi-Fi connectivity provided by the universities, while 84 or 34.6% of the respondents have access for the utilization of e-information resources from the institutional library. In addition, access to electronic resources by the respondents through cybercafé and other sources are 10 (14.5%), home 32 (13.2%), office 17 (7.0%), university computer laboratories 12 (5%).
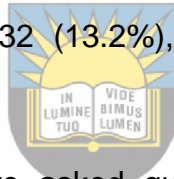
The undergraduate students were asked questions regarding their accessibility to electronic resources by the researcher. Consequently, these questions provided insight to the various locations of access of the respondents to electronic resources. These locations of access to electronic resources include cybercafé, university library, university computer laboratory, offices, residence and home. Below is Table 5.4 which shows the access of respondents to electronic resources from different locations.

Table 5.4 Access to Electronic Resources

(a) Cyber café	10 (14.5%)	(e) Residence	133 (54.7%)
(b) University Library	84(34.6%)	(f) Home	32(13.2%)
(c) University computer lab	12(5%)	(g) Other (Please specify)	6(2.5%)
(d) Office	17(7.0%)		

From the results of table 5.4 above, most of the undergraduate students 133(54.7%) accessed the electronic resources from their residences. This high number is due to the provision of accessible Wi-Fi at their various halls of residences. This is also depicted in table 5.5 below. Also, 84(34.6%) of the surveyed students accessed electronic resources through the university library, while 17 (7.0%) had access to e-resources through their offices. In addition, access to cybercafé and other sources were 10 (14.5%) and 6 (2.5%) respectively. Thus, it is imperative to discuss the frequency of accessibility on e-resources use among the respondents from different locations, as discussed below.

5.4.1 Frequency of Accessibility on Electronic Resources Use among Undergraduate Students from Different Locations

The respondents were asked to provide information regarding the questionnaire on how often they access electronic resources. From the foregoing, different options were indicated for the respondents to choose from. The results depicting this information is presented in Table 5.5 below.

Table 5.5: The Table on Frequency of Access to electronic resources from different locations

Locations	Never	Almost never	Occasionally /Sometimes	Almost every time	Every time
Cyber café	92(52.6%)	29(16.6%)	45(25.7%)	5(2.9%)	4(2.3%)
University library	14(6.8%)	17(8.3%)	82(40%)	61(29.8%)	31(15.1%)
University computer lab	14(6.7%)	7(3.3%)	70(33.3%)	76(36.2%)	43(20.5%)
Office	95(57.2%)	24(14.5%)	22(13.3%)	12(7.2%)	13(7.8%)
Residence	23(12.6%)	13(7.1%)	29(15.9%)	42(23.1%)	75(41.2%)
Home	42(26.4%)	18(11.3%)	34(21.4%)	32(20.1%)	33(20.8%)
Other (Please specify)	29(65.9%)	1(2.3%)	7(15.9%)	3(6.8%)	4(9.1%)

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Table 5.5 analyzed how often the undergraduate students engage in the utilization of e-information resources in the universities. Most undergraduate students utilize the e-information resources at their residences always, 75 (41.2%). It was also discovered that about 4 (2.3%) of the respondents make use of the cybercafés, university library, 31(15.1%), 43 (20.5%) respondents used the computer laboratory, 13 (7.8%) respondents make use of the office, home (33, 20.8%) and others were 4(9.1%). Also, in the course of the in-depth research interview, most of the interviewees make use of their residences to access electronic resources.

As revealed in table 5.5, the many of the respondents (41.2 %) noted that they often access the electronic resources from their residence, and this findings agree with results from previous studies where the electronic resources was mostly accessed from residences. Other empirical studies conducted that supports the findings of this research include Fyneman, (2014); Orsu, (2017); Mawere, (2018). This result was also revealed from a study conducted in Washington DC by Jones (2002), when he opined that 47% of the college students first began using electronic resources at home. He further stressed that the remaining 43% were shared among other locations such as cybercafé, university library, and office. The frequency of access to e-resources as well as demographic factors as determinants to access to electronic resources use among undergraduate students is illustrated in Figure 5.4 and chapter 5.5 respectively below.
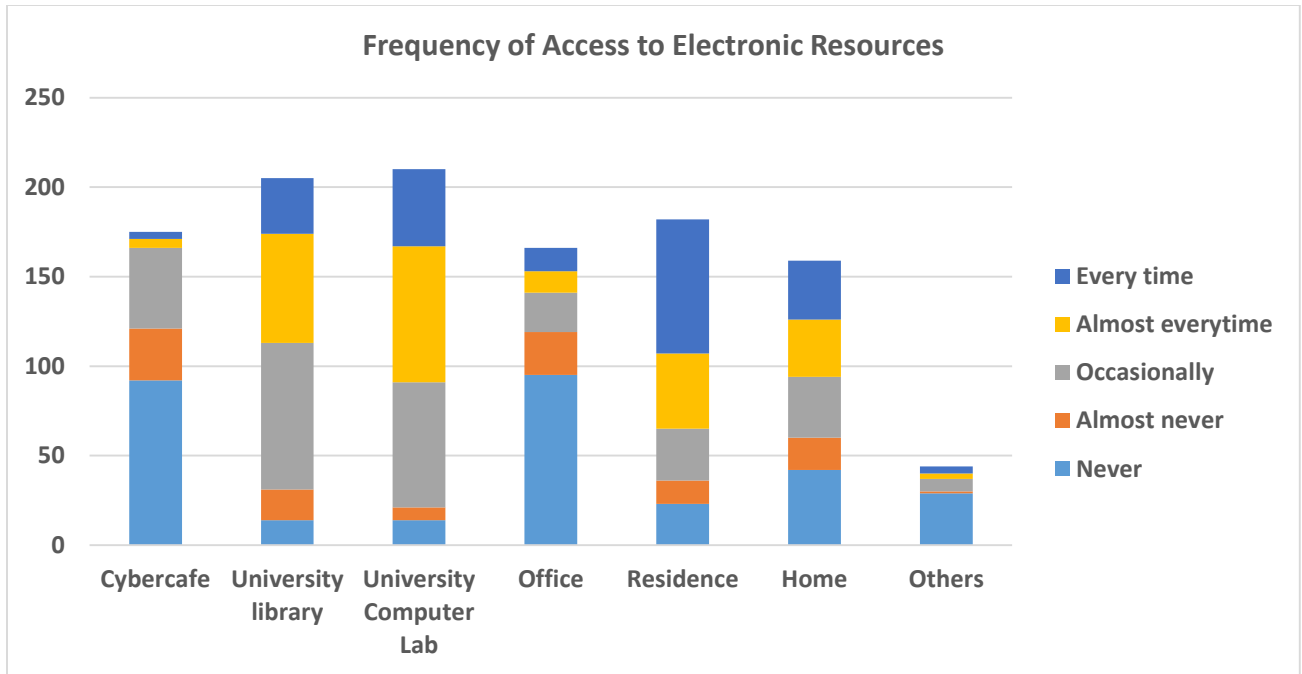
Figure 5.4: Stacked column chart depicting use of electronic resources from

Different locations.

5.1 DEMOGRAPHIC FACTORS AS DETERMINANTS TO ACCESSS ELECTRONIC RESOURCES USE AMONG UNDERGRADUATE STUDENTS

As stated by Cooper, (2006), the main motive of a descriptive study is to define a theme by producing information about the population understudied in the process of data collection. In the course of this this investigation, the description of the participant (the undergraduates) from the universities include age, gender, race, language, marital status, as well as access to electronic resources through various locations. Numerous research findings in respect of undergraduate students' access to electronic resources discovered that: accessibility to electronic resources contributes to students' academic development (Corbett, 2002); Wainer, (2008). Other empirical studies conducted that supports the findings of this research include Owston, (2001); Mann, 1997); students who are accessible to digital resources at home foracademic purposes demonstrate improved scores in their academic pursuit (OECD, 2006). The demographic factors that affect access to electronic resources include age, gender, religion were discussed. The age on accessibility to digital resources through cybercafé is hereby analyzed below in Chapter 5.5.1 below.

5.5.1 Age on access to electronic resources through cybercafé

Table 5 analyzed the age of respondents and their accessibility to digital resources through the cybercafé. The results states that the respondents that use e-resources

through the cybercafé are ages 20 and below(3.8%), ages 21-30 (7.5%), ages 31-40 (5.7%) and above 40 years (1.9%). The figures for the respondents who do not use electronic resources through the cybercafé are stated as 20 years and below (30.2%), 21-30years (56.6%), 31-40 years (9.4%), and above 40 years (3.8%). Also, in the course of the in-depth research interview, it was discovered that less than 20%. The findings on age and access to e-resources through cybercafé is hereby analyzed in Table 5.6 below.

Table 5.6: Analysis of age and access to electronic resources through cybercafé.

	20 years and below	21-30 years	31-40 years	40 + Years
I access electronic resources through Cyber café	3.8%	7.5%	5.7%	1.9%
I do not access electronic resources through Cyber café	30.2%	56.6%	9.4%	3.8%

5.5.2 Test to determine age and access to electronic resources through cybercafé

The researcher sought to know if there was any correlation among age of the respondents and their accessibility to digital resources through the cybercafé. The results were tested using Chi-Square method. The chi square test is functional when you have one definite variable from a single population. It is used to fix whether sample data are stable with a postulated distribution.

A chi-square test was accomplished to scrutinize the relation between age and accessibility to E-resources. A small p-value (typically ≤ 0.05) designates strong indication against the null hypothesis, so you reject the null hypothesis. A large p-value (> 0.05) shows weak indication against the null hypothesis, so you fail to reject the null hypothesis i.e. X^2(3, N=53) = 7.82. In the table below, the Pearson chi square (p- value) produced was .294, which is understood to mean that it is not important. Therefore, the clarification is that age has no effect on accessibility of respondents to electronic resources through cybercafé. The chi-square results to conclude age and access to e-resources through cybercafé is hereby illustrated in the table below.

Table 5.7: Chi Square Results to Determine Age and Utilization of E-Resources through Cybercafé

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.816[a]	3	.050
Likelihood Ratio	6.216	3	.102
Linear-by-Linear Association	4.262	1	.039
N of Valid Cases	53		

The bar chart depicting the Determinant of Age and Access to E-Resources through Cybercafé is shown in Figure 5.5 below.

Bar Chart
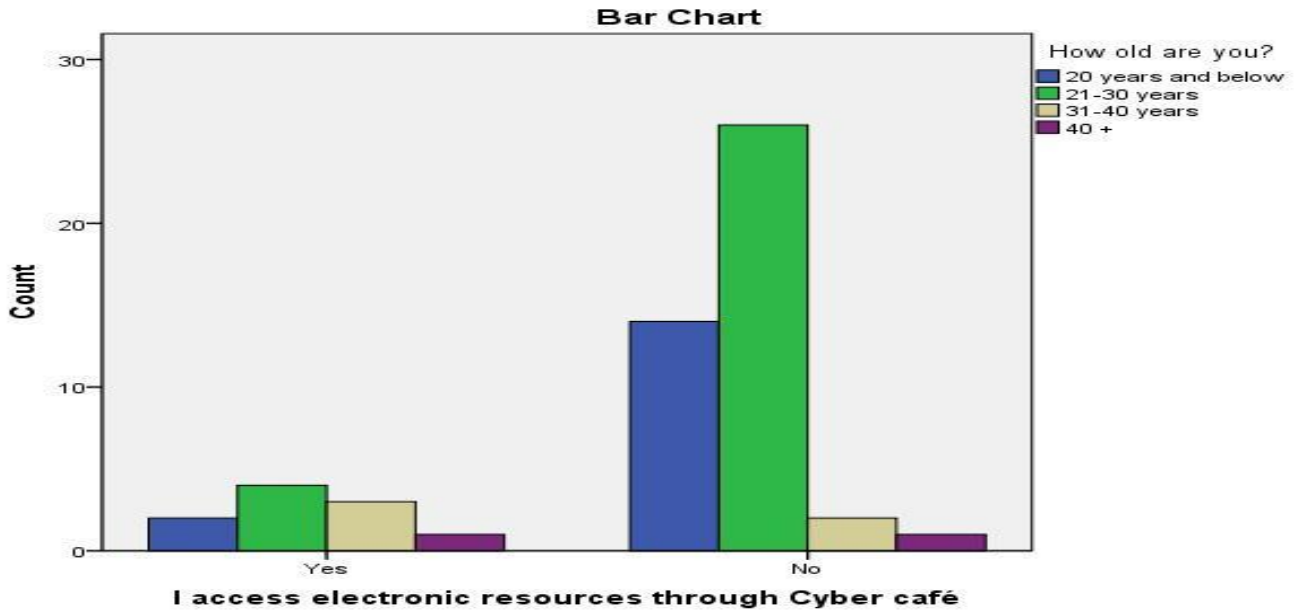
Figure 5.5: Showing Determinant of Age and Access to E-Resources through Cybercafé.

The figure 5.5 above shows that of the surveyed undergraduate students, respondents that are within the ages of 21-30 are the most active population regarding the use of electronic resources. Next to them are those that are 20 years and below. Other empirical studies have analyzed the impact of age on access to electronic resources through the cybercafé, and these include Adomi, (2004); Fatoki, (2004); Odongo, (2009); Quadri, (2013). At this juncture the impact of gender on e-resources is depicted in Figure 5.6 below.

5.5.3 Impact of gender and access to electronic resources through the university library
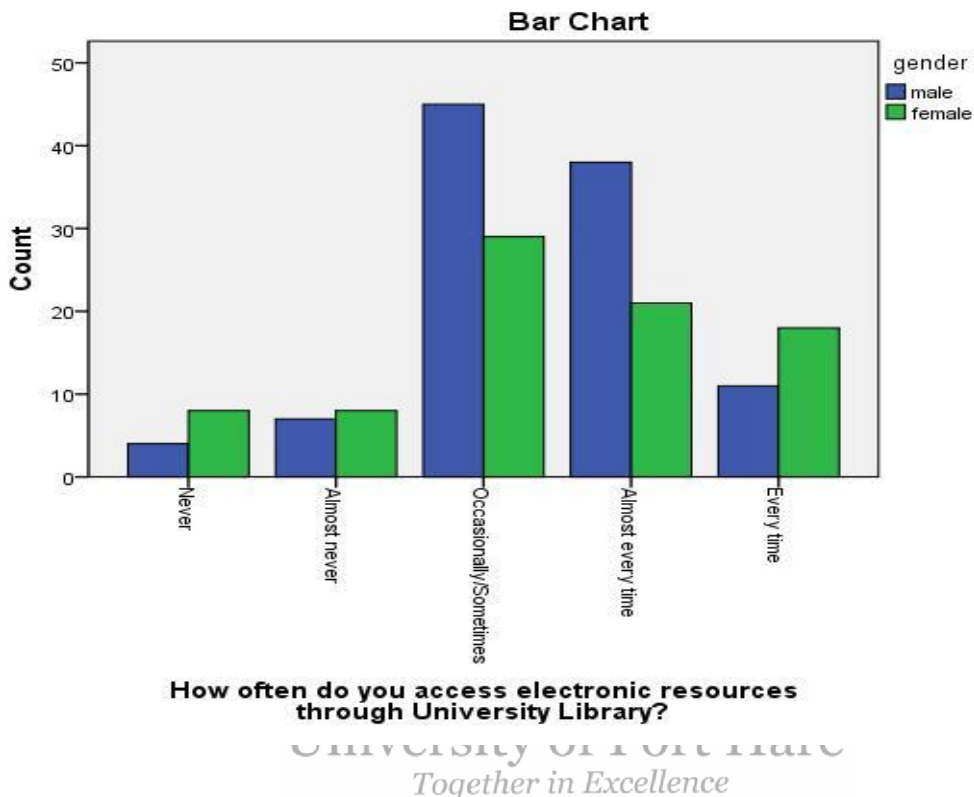
Figure 5.6: Showing Impact of Gender and Access to E-Resources through the University Library

From the above figure, it is evident that at every time occasionally and sometimes respectively, it is observed that more males use electronic resources through the university than their female counterparts. Also, more females have never used electronic resource through the university library than the males. Other empirical studies conducted that supports the findings of this research include Shashanni (1997) and Rajogopal, (2003) of the viewpoint that more males make use of library e-resources than their female

counterparts. It is necessary to discuss the language and access to e-resources through the university library, as shown in Table 5.8 below.

5.5.4 Language and access on electronic resources through the university library

Table 5.8 analyses the language of respondents and utilization of e-information resources through the university library. The results states that the respondents involved in the utilization of e-information resources through the university library are English (15.1%), Afrikaans (1.1%), Xhosa (76.3%) , Zulu (6.5%) and others (1.1%). The figures for the respondents who do not use electronic resources through the university library are stated as English (15.6%), Afrikaans (0.8%), Xhosa (75%), Zulu (0.8%) and others (0.8%). From the foregoing, the analysis of language and e-resources use through the university library is hereby illustrated in Table 5.8 below.
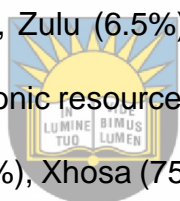
Table 5.8: Analysis of Language and electronic resources use through University Library

	English	Afrikaans	Xhosa	Zulu	Others
I access electronic resources through University Library	15.1%	1.1%	76.3%	6.5%	1.1%
I do not access electronic resources through University Library	15.6%	0.8%	75.0%	7.8%	0.8%
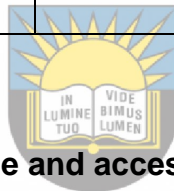
5.5.5 Test to determine language and access to electronic resources through the university library

The researcher sought to know if there was any relationship between the language of the respondents and their access to electronic resources through the university library. The results were tested using Chi-Square method. In the table below, the Pearson chi square (p- value) generated was .789, which is interpreted to mean that it is highly significant. Therefore, the interpretation is that language has high influence regarding respondents to electronic resources through the university library. Thus, the chi-square results to determine the impact on access to e-resources through the university library is highlighted below.

Table 5.9: Chi Square Results to Determine Impact of Language on Access to E-Resources through the University Library

The chi square test of independence was performed to examine the relationship between language and access to e-resources through the university library.. A small p-value (typically ≤ 0.05) designates strong indication against the null hypothesis, so you reject the null hypothesis. A large p-value (> 0.05) shows weak indication against the null hypothesis, so you fail to reject the null hypothesis i.e. X^2(3, N=53) = 7.82. In the table below, the Pearson chi square (p- value) produced was .294, which is understood to mean that it is not important. Therefore, the clarification is that age has no effect on accessibility of respondents i.e. X^2(4, N=128)= 1.71. In the table below, the Pearson chi square (p-value) generated was 1.71, which is interpreted to mean that it is not significant. Therefore, the interpretation is that language has no influence on access of respondents to electronic resources through university library. Studies in literature, such as that conducted by UNESCAP, (2005), showed the impact of language on access to electronic resources through the university library. Other empirical studies conducted that supports the findings of this research include Paramskas, (1993) posited in his study about the relevance of e-platform for teaching and learning languages in the classroom within the university. Therefore, the chi-square test to determine the impact on access to e-resources through the university library is highlighted below.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.712[a]	4	.789
Likelihood Ratio	2.177	4	.703
Linear-by-Linear Association	.000	1	.987
N of Valid Cases	128		
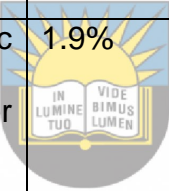
5.5.6. Impact of language and access to electronic resources through the computer laboratory

Table 5.10 analyses the language of respondents and their utilization of e-information resources through the computer laboratory. The results states that the respondents that use e-resources through the university library are English (12.6%), Afrikaans (1.3%), Xhosa (64.2%) , Zulu (4.4%) and others (1.3%). The figures for the respondents who do not use electronic resources through the university library are stated as English (1.9%),

Afrikaans (0.0%), Xhosa (13.2%), Zulu (1.3%) and others (0.0%). To this effect, the analysis on determinant of language and access to e-resources through the computer laboratory is hereby discussed in Table 5.10.

Table 5.10: Analysis on Determinant of Language and Access to Electronic Resources through the Computer Laboratory

	English	Afrikaans	Xhosa	Zulu	Others
I access electronic resources through the Computer Laboratory	12.6%	1.3%	64.2%	4.4%	1.3%
I do not access electronic resources through the Computer Laboratory	1.9%	0.0%	13.2%	1.3%	0.0%

5.5.7 Test to determine language and access to electronic resources use through the computer laboratory

The performance of the chi square test was used to decipher if there was any relationship between the language of the respondents and their access to electronic resources through the computer laboratory. The results were tested using Chi-Square method, using formula $X^2(4, N=159) = 1.24$. In the table below, the Pearson chi square (p- value) generated was 1.24, which is interpreted to mean that it is highly significant. Therefore,

the interpretation is that language has high influence regarding respondents' use of electronic resources through the computer laboratory. Other empirical studies on language on access to electronic resources use through the computer laboratory include Al-Sultan, (1999); Al-Helaly, (1999). To this effect, the chi-square test to determine language and access to e-resources use through the computer laboratory is illustrated in Table 5.10.

Table 5.10   Chi Square Results to Determine Language and Access to E-Resources use through the Computer Laboratory.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.240[a]	4	.872
Likelihood Ratio	1.878	4	.758
Linear-by-Linear Association	.209	1	.648
N of Valid Cases	159		

5.5.8 Impact of Gender on Access to E-Resources through Computer Laboratory
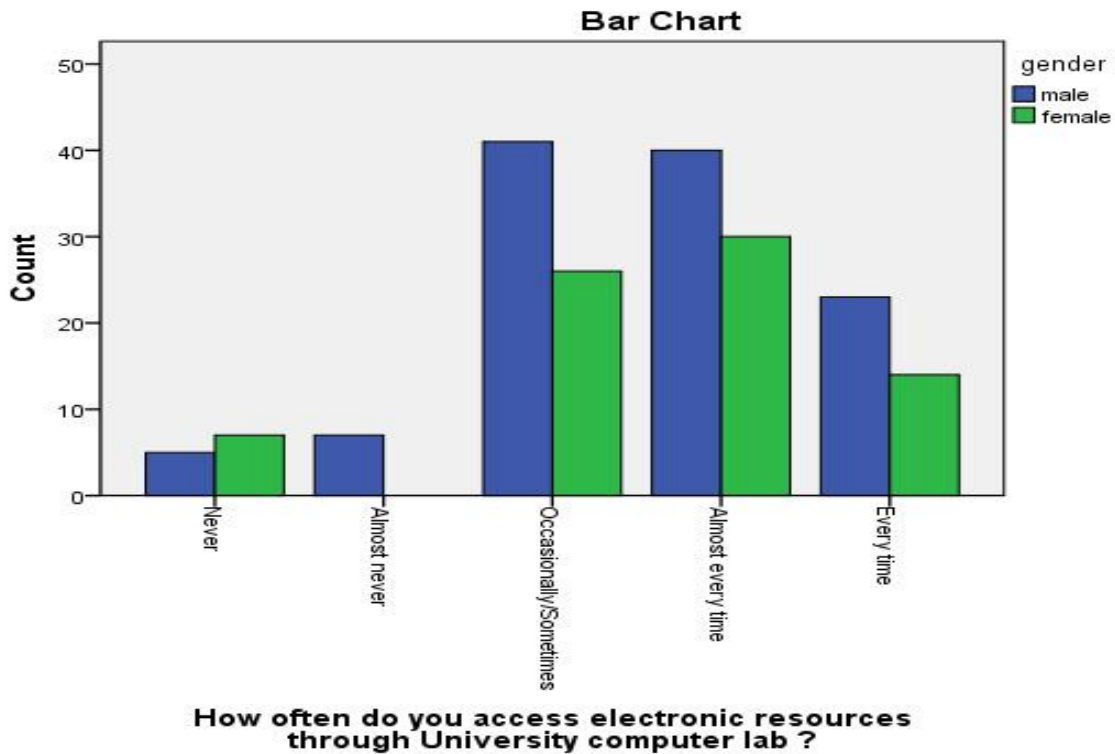
Figure 5.7: Showing Determinant of Gender and Access to E-Resources through Computer Laboratory.

The result from the figure above illustrates that the male respondents access electronic resources more than the females. This is the trend every time, sometimes and almost every time. Other empirical studies conducted that supports the findings of this research

include Gamage, (2007); Alao, (2008); Nwezeh, (2010); Park, (2010). Thus, gender and access to e-resources through the university offices is analyzed in Table 5.11 below.

5.5.9 Gender and access to electronic resources through the university offices

Table 5.11 analyses the gender of respondents and access to electronic resources through the university offices. The results states that the male and female respondents that use of e-resources through the university offices are 21.3% and 6.6% respectively, while male and female respondents that use of e-resources through the university offices are 44.3% and 27.9% respectively. Thus, the Table 5.11 below analyzes gender and access to e-resources through the university offices.

Table 5.11: Analysis on Determinant of Gender and Access to Electronic Resources through the University Offices

Access to E-Resources through University offices	Male	Female
I access electronic resources through the university offices	21.3%	6.6%
I do not access electronic resources through the university offices	44.3%	27.9%

5.5.10 Test to determine gender and access to electronic resources use through the university offices

In a bid to determine if there was any relationship between gender of the respondents and access to electronic resources through the university offices, the results were tested using Chi-Square method. In the table below, the Pearson chi square (p- value) generated was 1.24, using formula X= (1, N=61) =1.24 which is interpreted to mean that it is not significant. Therefore, the interpretation is that gender has no influence regarding use of respondents to electronic resources through the university offices. Other empirical studies conducted that supports the findings of this research include Kaminer, (1997); Costa, (2000); Al-Ansari, (2006). To this effect, the chi-square results determined gender on e-resources use through the university offices, as shown in the table below.
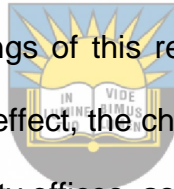
Table 5.12: Chi Square Results to Determine Gender on E-Resources use through the University Offices.

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.240[a]	1	.266		
Continuity Correction[b]	.661	1	.416		
Likelihood Ratio	1.292	1	.256		
Fisher's Exact Test				.371	.210
Linear-by-Linear Association	1.219	1	.269		
N of Valid Cases	61				
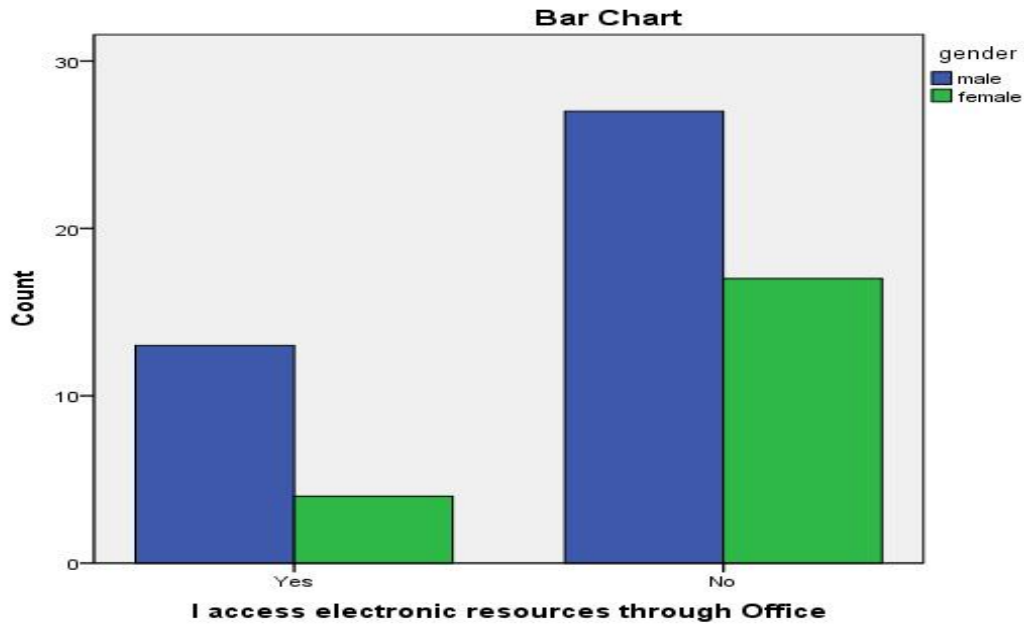
Figure 5.8: Showing Determinant of Gender and Access to E-Resources through University Offices.

From the above figure 5.8, it is evident that at every time occasionally and sometimes respectively, it is observed that more males use electronic resources through the university than their female counterparts. Other empirical studies conducted that supports the findings of this research include Daramola, (2016). At this juncture, it is crucial to discuss the analysis to determine age and access to e-resources use through the university offices, as exemplified in Table 5.13 below.

5.5.11 Analysis to determine age and access to electronic resources use through the university offices

Table 5.13 analyses the age of respondents and access to electronic resources through the university offices. The results state that the respondents that use e-resources through the university offices are: 20 years and below (3.5%), 21-30 years (12.3%), 31-40 years (8.8%), above 40 years (5.3%). The figures for the respondents who do not access electronic resources through the university offices are stated as 20 years and below (22.8%), 21-30 years (42.1%), 31-40 years (3.5%), above 40 years (1.8%). Thus, Table 5.13 below illustrates age and access to e-resources through office.

Table 5.13: Age and access to electronic resources through Office

Access to electronic resources through Office	20 years & Below	21-30 years	31-40 years	40+ years
I access electronic resources through Office	3.5%	12.3%	8.8%	5.3%
I do not access electronic resources through Office	22.8%	42.1%	3.5%	1.8%

5.5.12 Test to determine age and access to electronic resources through the university offices

The researcher sought to know if there was any relationship between the age of the respondents and access to electronic resources through the university offices. The results were tested using Chi-Square method. In the table below, the Pearson chi square (p-value) generated was 12.42, using formula X2= (3, N=57) = 12.42 which is interpreted to mean that it is not significant. Therefore, the interpretation is that age has no influence regarding access of respondents to electronic resources through the university offices. Thus, the chi-square results to determine age on access to e-resources through the university offices is analyzed in Table 5.14 below.
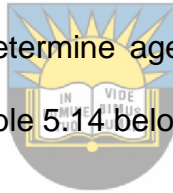
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Table 5.14: Chi Square Results to Determine Age on Access to E-Resources through the University Offices.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.416[a]	3	.006
Likelihood Ratio	11.696	3	.009
Linear-by-Linear Association	10.006	1	.002
N of Valid Cases	57		
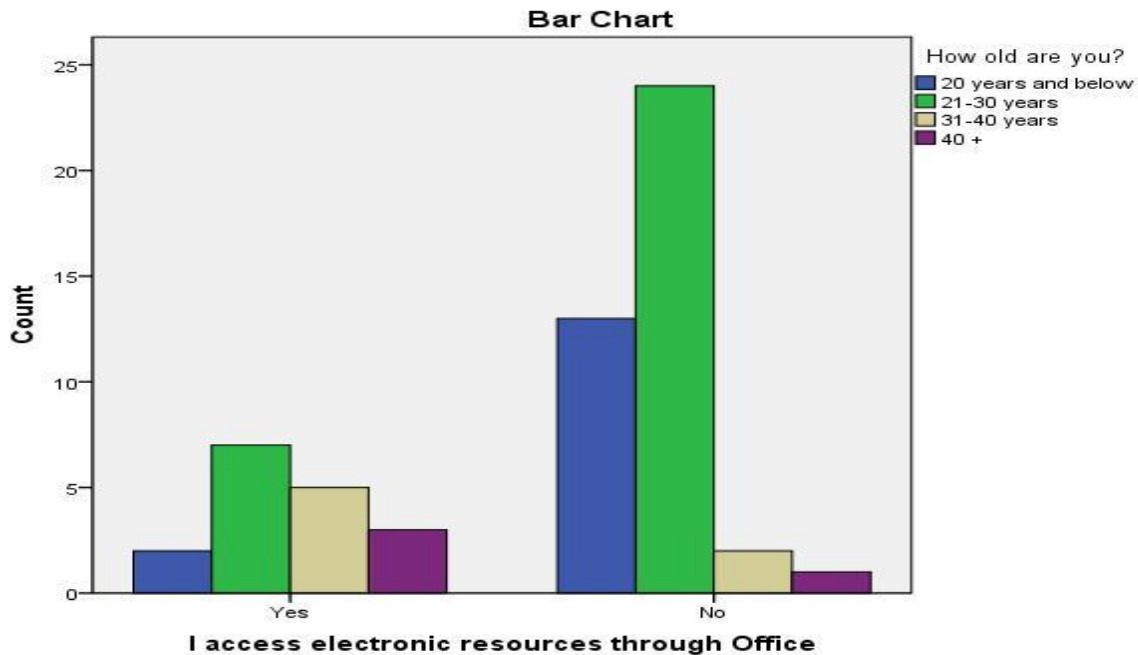
Figure 5.9: Showing Determinant of Age and Access to E-Resources use through University Offices.

The figure 5.9 above illustrates that respondents that are 21-30 years of age are preponderantly the major users, and they access electronic resources through the university offices. Next to that category are the respondents who are between 31 and 40 years old, and these group are believed to be working-class students who have influence in using university offices to use e-resources. Other studies conducted in this regard include Gilbert, (1996); Mungania, (2003). Therefore, the analysis to determine gender and access to e-resources through the residence of respondents is stated in Table 5.15 below.

5.5.13 Analysis to determine gender and access to electronic resources through residence of respondents

Table 5.14 analyses the gender of respondents and their access to electronic resources through residence of respondents. The results states that the male and female respondents that use e-resources through the university offices are 59.5% and 40.5% respectively, while male and female respondents that use e-resources through residence are 65.5% and 34.5% respectively. Thus, the Table 5.15 analyzed gender and access to e-resources through residence.

Table 5.15: Gender and Access to E-Resources use through Residence.

Access to E-Resources through Residence	Male	Female
I access electronic resources through residence of respondents	59.5%	40.5%
I do not access electronic resources through residence of respondents	65.5%	34.5%

5.5.14 Test to determine gender and access to electronic resources use through residence of respondents

This study also investigated if there was any relationship (or otherwise) between the gender of respondents and access to electronic resources through the residence of respondents. The results were tested using Chi-Square method. In the table below, the Pearson chi square (p- value) generated was .569, which is interpreted to mean that the rate of significance is high. Therefore, the interpretation is that gender is a determinant regarding respondents' utilization of e-information resources through the student respondents' residences. Therefore, the chi-square data were run with the SPSS software, and the results are hereby presented in Table 5.16 as well as the Bar Chart depicted in Figure 5.10 below.
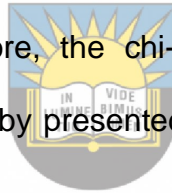
Table 5.16: Chi Square Results to Determine Gender and access to E-Resources use through Residence of Respondents.

Pearson Chi Square	.569
No of valid cases	108
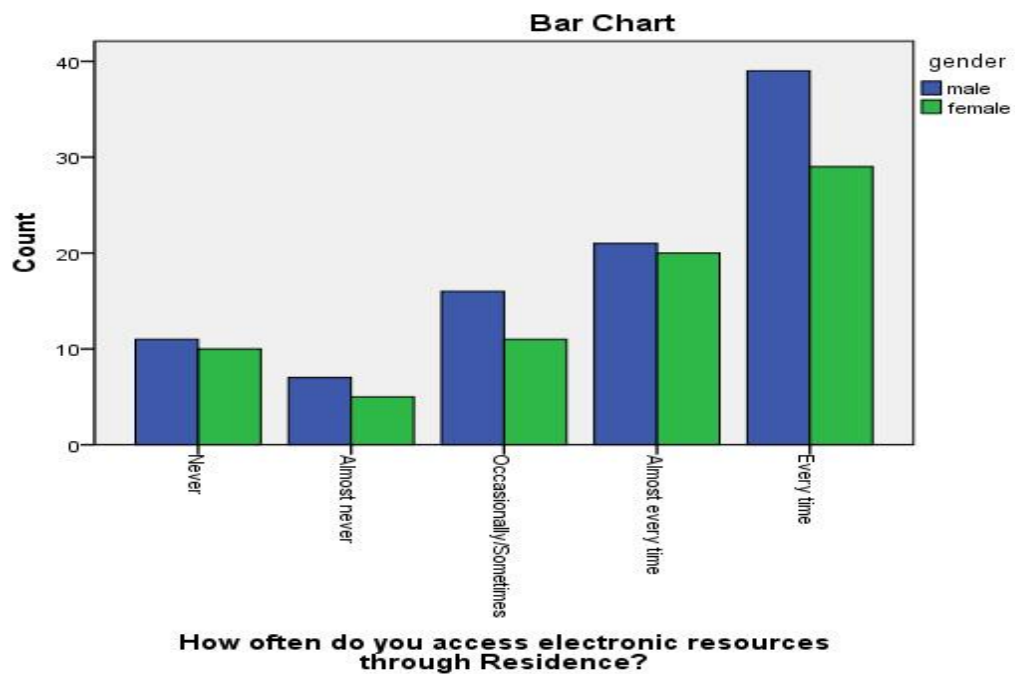
Figure 5.10: Showing Determinant of Gender and access to E-Resources through Residence of Respondents

From the analysis of this study, it was discovered that at every time occasionally and sometimes respectively, that more males use electronic resources through the residences than their female counterparts. Also, it was discovered that there is a very close margin between the males and female respondents that never use e-resources from their residence. This situation is peculiar to residences that accommodate both male and female students that are mainly off-campus. Other empirical studies conducted that supports the findings of this research include Shodt, (2005); Mungania, (2003). The analysis to determine age and access to electronic resources through residence of respondents is highlighted in Table 5.17 below.

5.5.15 Analysis to determine age and access to electronic resources use through residence of respondents

Table 5.15 analyses the age of respondents and access to electronic resources use through residence of respondents. The results states that the respondents that use e-resources through the university offices are: 20 years and below (36.8%), 21-30 years (57.9%), 31-40 years (2.6%), above 40 years (2.6%). The figures for the respondents who do not use electronic resources through the university offices are stated as 20 years and below (35.7%), 21-30 years (53.6%), 31-40 years (7.1%), above 40 years (3.6%). The Table 5.17 below is the analysis for Chapter 5.5.15.

Table 5.17 Age and use of electronic resources through Residence of Respondents

Access to electronic resources through residence of respondents	20 years & Below	21-30 years	31-40 years	40+ years
I access electronic resources through residence of respondents	36.8%	57.9%	2.6%	2.6%
I do not access electronic resources through residence of respondents	35.7%	53.6%	7.1%	3.6%
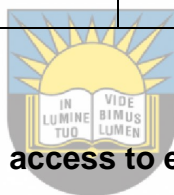
5.5.16 Test to determine age and access to electronic resources through residence of respondents

The researcher thought it expedient to determine if there was any relationship (or otherwise) between the age of respondents and access to electronic resources through the residence of respondents. The results were tested using Chi-Square method. In the table below, the Pearson chi square (p- value) generated was 8.29 using formula X2= (4, N=122) =8.29, which is interpreted to mean that the rate of significance is high. Therefore, the interpretation is that age is a determinant regarding access of respondents to electronic resources through the respondents' residences. Thus, the chi-square test was conducted so as to determine age and access to e-resources through residence of respondents, as depicted in the subsequent Table and Figure below.

Table 5.18: Chi Square Results to Determine Age and access to E-Resources through Residence of Respondents.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.286[a]	4	.082
Likelihood Ratio	9.534	4	.049
Linear-by-Linear Association	.011	1	.917
N of Valid Cases	122		

Figure 5.11: Showing Determinant of Age and Access to E-Resources through Residence of Respondents

The analysis of this study revealed that more males, who are within the active e-resource using age bracket of 21 to 30 years old access electronic resources through the residences than their female counterparts. This age bracket is followed in terms of use of e-resources through residences by the respondents that are 20 years and below. Also, it was discovered that there is a close margin between the males and female respondents that never use e-resources from their residence. An empirical study conducted by Ajuwon, (2015) in this regard reveals the influence of age on access to electronic resources use. The analysis of language and access to e-resources use through the respondents' residence is depicted in Table below.

5.5.17 Analysis of language and access to electronic resources use through the residence of respondents

Table 5.17 analyses the language of respondents and access to electronic resources through the residence of respondents. The results states that the respondents that use e-resources through the university library are English (13.1%), Afrikaans (2.4%), Xhosa (77.4%) , Zulu (2.4%) and others (4.8%). The figures for the respondents who do not use electronic resources through the university library are stated as English (15.8%), Afrikaans (0.0%), Xhosa (71.1%), Zulu (13.2%) and others (0.0%). Thus, the Table 5.19 below further discusses this result.

Table 5.19 Analysis on Determinant of Language and access to Electronic Resources through Residence.

	English	Afrikaans	Xhosa	Zulu	Others
I access electronic resources through the residence of respondents	13.1%	2.4%	77.4%	2.4%	4.8%
I do not access electronic resources through the residence of respondents	15.8%	0.0%	71.1%	13.2%	0.0%

5.5.18 Test to determine language and access to electronic resources through residence of respondents

The researcher thought it expedient to determine if there was any relationship (or otherwise) between the language of respondents and access to electronic resources through the residence of respondents. The results were tested using Chi-Square method .In the table below, the Pearson chi square (p- value) generated was 8.29, using formula $X2 = (4, N=122) = 8.29$, which is interpreted to mean that the rate of significance is negligible. Therefore, the interpretation is that language is not a determinant regarding respondents' use of electronic resources through the respondents' residences Other empirical studies conducted that supports the findings of this research include (Al-Ansari, 1999; Al-Helaly 1999; Alampay, 2006). Thus, the chi-square results to determine language and access to e-resources use through residence of respondents is hereby depicted in Table and Figure below.

Table 5.20: Chi Square Results to Determine Language and access to E-Resources use through Residence of Respondents.

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.286[a]	4	.082
Likelihood Ratio	9.534	4	.049
Linear-by-Linear Association	.011	1	.917
N of Valid Cases	122		

Figure 5.12: Showing Determinant of Language and Access to E-Resources through Residence of Respondents

5.5.19 Analysis to determine gender and access to electronic resources use from home

In the course of this study, the researcher wanted to know if gender was a determinant and access to e-resources from home. In a bid to unpack this research question, the Table 5.19 below analyses the gender of respondents and their and access to electronic resources from home. The results states that the male and female respondents that use e-resources through the university offices are 56.7% and 43.3% respectively, while male and female respondents that use e-resources through residence are 65.2% and 34.8%

respectively. Therefore, gender as determinant and access to e-resources use from home is analyzed in Table 5.21 below.

Table 5.21: Gender as Determinant and access to E-Resources use from Home.

Access to E-Resources from home	Male	Female
I access electronic resources from home of respondents	56.7%	43.3%
I do not access electronic resources from home of respondents	65.2%	34.8%

5.5.20 Test to determine gender and access to electronic resources use from home of respondents

This study also investigated if there was any relationship (or otherwise) between the gender of respondents and access to electronic resources through the residence of respondents. The results were tested using Chi-Square method. In the table below, the Pearson chi square (p- value) generated was .563, using formula X2= (N=76) = .563, which is interpreted to mean that the rate of significance is high. Therefore, the interpretation is that gender is a determinant regarding access of respondents to electronic resources through home of respondents. Thus, the chi square results to determine gender on e-resources use from home of respondents is analyzed in Table 5.22 and Figure 5.13 below.

Table 5.22: Chi Square Results to Determine Gender on E-Resources use from Home of Respondents.

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	.563[a]	1	.453	
Continuity Correction[b]	.259	1	.611	
Likelihood Ratio	.560	1	.454	
Fisher's Exact Test				.478
Linear-by-Linear Association	.555	1	.456	
N of Valid Cases	76			
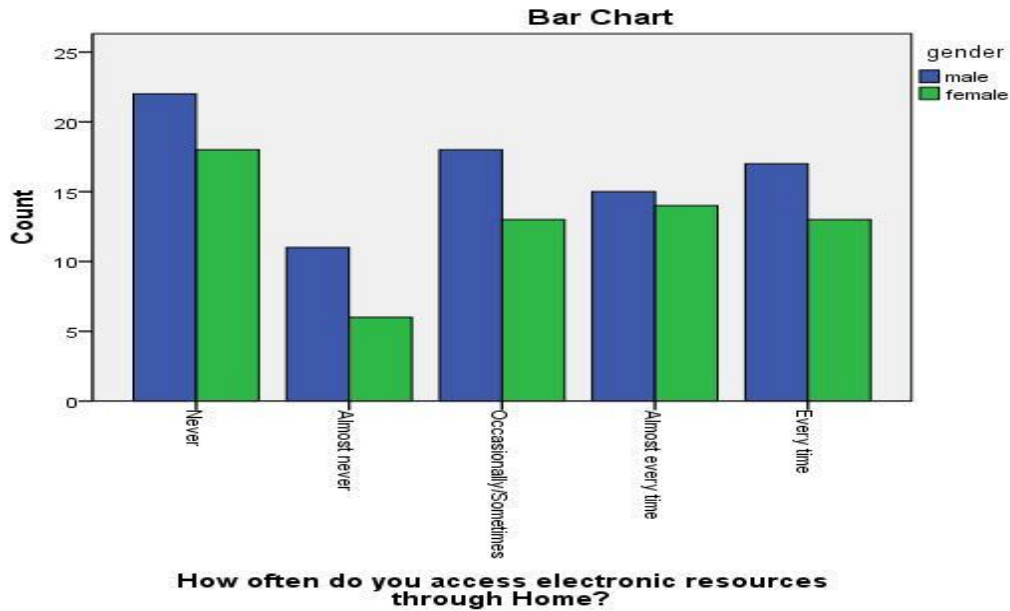
Figure 5.13: Showing Determinant of Gender and access to E-Resources use from Home of Respondents.

From the analysis of this study, it was discovered that more males use electronic resources through the residences than their female counterparts. Other empirical studies conducted that supports the findings of this research include Rose, (2001); Lorence, (2007). Thus, the Analysis to determine age and access to electronic resources use from home of respondents is shown in chapter 5.5.21 below

5.5.21 Analysis to determine age and access to electronic resources use from home of respondents

Table 5.21 analyses the age of respondents and access to electronic resources from home of respondents. The results states that the respondents that use e-resources through the university offices are: 20 years and below (26.7%), 21-30 years (53.3%), 31-40 years (13.3%), above 40 years (6.7%). The figures for the respondents who do not access electronic resources through the university offices are stated as 20 years and below (33.3%), 21-30 years (59.5%), 31-40 years (2.4%), above 40 years (4.8%). Thus, Table 5.23 below illustrates age and access to e-resources through residence of respondents.

Table 5.23: Age and access to electronic resources through Residence of Respondents

Access to electronic resources through residence of respondents	20 years & Below	21-30 years	31-40 years	40+ years
I access electronic resources through residence of respondents	26.7%	53.3%	13.3%	6.7%
I do not access electronic resources through residence of respondents	33.3%	59.5%	2.4%	4.8%

5.5.22 Test to determine age and access to electronic resources use through home of respondents

The researcher thought it expedient to determine if there was any relationship (or otherwise) between the age of respondents and access to electronic resources through the residence of respondents. The results were tested using Chi-Square method. In the table below, the Pearson chi square (p- value) generated was 1.54, using formula $X^2 = (2, N=54) = 1.54$, which is interpreted to mean that it is not significant. Therefore, the interpretation is that age is not a determinant regarding respondents' access to electronic resources through the respondents' homes. Other empirical studies conducted that supports the findings of this research include Mungania, (2003); Gilbert, (1996). Thus, Table 5.22 illustrates chi-square results to determine age and access to e-resources from home of respondents.

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Table 5.24: Chi Square Results to Determine Age and access to E-Resources Use from Home of Respondents.

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.543[a]	2	.462
Likelihood Ratio	1.964	2	.375
Linear-by-Linear Association	.223	1	.636
N of Valid Cases	54		
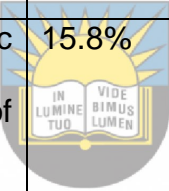
5.5.23 Analysis on determinant of language and access to electronic resources use from home of respondents

Table 5.23 analyses the language of respondents and access to electronic resources through the residence of respondents. The results states that the respondents that use e-resources from the home of respondents are English (28.1%), Xhosa (68.8%), Zulu (.0%), others (3.1%). The figures for the respondents who do not use electronic resources

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from the home of respondents are stated as English (15.8%), Xhosa (0.0%), Zulu (71.1%), and others (13.2%). Therefore, Table 5.25 below discusses the determinant of language and access to e-resources from home of respondents.

Table 5.25: Analysis on determinant of language and access to electronic resources use from home of respondents.

	English	Xhosa	Zulu	Others
I access electronic resources through the home of respondents	28.1%	68.8%	.0%	3.1%
I do not access electronic resources through the home of respondents	15.8%	0.0%	71.1%	13.2%

5.5.24 Test to determine language and access to electronic resources use from home of respondents

The researcher thought it expedient to determine if there was any relationship (or otherwise) between the language of respondents and access to electronic resources from home of respondents. The results were tested using Chi-Square method. In the table below, the Pearson chi square (p- value) generated was 13.41, using formula $X2= (6, N=66) = 13.41$, which is interpreted to mean that the rate of significance is negligible.

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Therefore, the interpretation is that language is not a determinant regarding respondents' access to electronic resources from the home of respondents. From the foregoing, Table 5.26 below analyzed the chi-square results to determine language on e-resource use from home of respondents.

Table 5.26: Chi Square Results to Determine Language on E-Resources Use from home of respondents

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.407[a]	6	.037
Likelihood Ratio	8.642	6	.195
Linear-by-Linear Association	.373	1	.542
N of Valid Cases	66		

5.5.25 Analysis to determine gender and access to electronic resources use from other sources

In the course of this study, the researcher wanted to know if gender was a determinant and access to e-resources from other sources. In a bid to unpack this research question, the Table 5.25 below analyses the gender of respondents and their use of electronic resources from other sources. The results states that the male and female respondents that use e-resources from other sources are 80.0% and 20.0% respectively, while male and female respondents that access e-resources from other sources are 58.3% and 41.7% respectively. Other empirical studies on influence of gender on electronic resources use from other sources include (Rajagopal, 2003; Nwezeh, 2010). Thus, Table 5.25 below illustrates gender as determinant and access to e-resources from other sources.
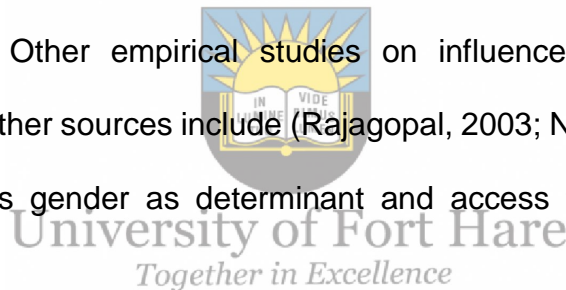
Table 5.25: Gender as Determinant and access to E-Resources Use from Other Sources

Access to E-Resources from Other Sources.	Male	Female
I access electronic resources from Other Sources.	80.0%	20.0%
I do not access electronic resources from Other Sources.	58.3%	41.7%

5.5.26 Test to determine gender and access to electronic resources use from other sources

This study also investigated if there was any relationship (or otherwise) between the gender of respondents and access to electronic resources from other sources of respondents. The results were tested using Chi-Square method. In the table below, the Pearson chi square (p- value) generated was 1.54, using formula $X2= (2, N=54) = 1.54$, which is interpreted to mean that the rate of significance is high. Therefore, the interpretation is that gender is a determinant regarding respondents' access to electronic resources from other sources. These other sources are mainly from the subscription of data bundles for in internet browsing from mobile telecommunication network service providers such as MTN, Vodacom, Cell-C, etc. Other empirical studies conducted that supports the findings of this research include Rose, (2001); Daramola, (2016). Therefore, Table 5.26 below analyzed the chi-square results to determine gender and access to e-resource from other sources.

Table 5.26: Chi Square Results to Determine Gender and access to E-Resources Use from other sources.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.543[a]	2	.462
Likelihood Ratio	1.964	2	.375
Linear-by-Linear Association	.223	1	.636
N of Valid Cases	54		

5.5.27 Analysis to determine age and access to electronic resources use from other sources

Table 5.27 analyses the age of respondents and access to electronic resources from other sources of respondents. The results states that the respondents that use e-resources from other sources are: 20 years and below (40.0%), 21-30 years (20.0%), 31-40 years (40.0%), above 40 years (.0%). The figures for the respondents who do not

use electronic resources from other sources are stated as 20 years and below (31.8%), 21-30 years (59.1%), 31-40 years (4.5%), above 40 years (4.5%). The Table 5.28 below analyzed age and use of e-resources from other sources.

Table 5.28: Age and use of electronic from other sources

Access to electronic resources from other sources	20 years & Below	21-30 years	31-40 years	40+ years
I access electronic resources from other sources	40.0%	20.0%	40.0%	.0%
I do not access electronic resources from other sources	31.8%	59.1%	4.5%	4.5%

5.5.28 Test to determine age and access to electronic resources use from other sources

The researcher thought it expedient to determine if there was any relationship (or otherwise) between the age of respondents and access to electronic resources through the residence of respondents. The results were tested using Chi-Square method. In the table below, the Pearson chi square (p- value) generated was 13.41, using formula $X^2 = (6, N=66) = 13.41$, which is interpreted to mean that it is not significant. Therefore, the interpretation is that age is not a determinant regarding respondents' use of electronic

resources from other sources. Other empirical studies conducted that supports the findings of this research include Rose, (2001); Odongo, (2009). Thus, the Table 5.29 below further explains the chi-square results determine age and access to e-resources from other sources.

Table 5.29: Chi Square Results to Determine Age and access to E-Resources use from other sources.

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.407ª	6	.037
Likelihood Ratio	8.642	6	.195
Linear-by-Linear Association	.373	1	.542
N of Valid Cases	66		

5.5.29 Analysis on language and access to electronic resources from other sources

Table 5.29 analyses the language of respondents and access to electronic resources from other sources. The results states that the respondents that access e-resources from the home of respondents are English (33.3%), Xhosa (50.0%), Zulu (.0%), others (16.7%). The figures for the respondents who do not use electronic resources from other sources of respondents are stated as English (11.9%), Xhosa (76.3%), Zulu (11.9%), and others (.0%). Table 5.30 as shown below illustrates language and access to e-resources from other sources

Table 5.30: Analysis on Determinant of Language and access to Electronic Resources use from Other Sources

	English	Xhosa	Zulu	Others
I access electronic resources from other sources.	33.3%	50.0%	.0%	16.7%
I do not access electronic resources from other sources.	11.9%	76.3%	11.9%	.0%

5.5.30 Test to determine language and access to electronic resources use from other sources

The researcher thought it expedient to determine if there was any relationship (or otherwise) between the language of respondents and access to electronic resources from other sources. The results were tested using Chi-Square method. In the table below, the Pearson chi-square (p-value) generated was 13.41, using formula X2= (6, N=66) = 13.41, which is interpreted to mean that the rate of significance is negligible. Therefore, the interpretation is that language is not a determinant regarding respondents' access to electronic resources from other sources, such as internet bundle from GSM network providers. Other empirical studies conducted that supports the findings of this research include Epic, (2001); Annunobi, (2009). Also, Alampay (2006) states that accessing electronic resources from other sources depending on two dimensions. First, is the actual, i.e. the ability to use it, and secondly, how users are able to access electronic resources through their various languages. Therefore, analysis to determine language and access to e-resources is further depicted in Table below.

Table 5.31: Chi Square Results to Determine Language and access to E-Resources USE from other sources.

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.407[a]	6	.037
Likelihood Ratio	8.642	6	.195
Linear-by-Linear Association	.373	1	.542
N of Valid Cases	66		

5.6. CONCLUSION

The main focus of this chapter was to investigate the demographic factors as determinants of utilization and accessibility of electronic resources from their different locations among the undergraduate students in the selected Eastern Cape Universities. It was discovered from this research that there are some demographic factors that determine the accessibility and use of electronic resources, and these are age, gender

and language. To get a clearer understanding of how undergraduate students make use of electronic resources, it was revealed from the findings of this study that age and gender are major variables that influence electronic resources accessibility and use among the respondents from their different locations. It was also discovered on account of age that most of the respondents make use of electronic resources mainly from their residences (21-30 years old), due to the fact that their residences provide them with free accessibility to Wi-Fi, comfort and privacy. Also, the benefit of interacting with other colleagues through group discussions is encouraged by respondents who live in residences within the campus. Further, the results depicted that age has no influence regarding access of respondents' to electronic resources through their residences, this is because the respondents have equal access to the use of the e-resources no matter how old or young they are. Most of the respondents who make use of electronic resources were between the ages of 21 and 30 years old, this is due to the fact that the respondents in this age category are the most ICT-literate, and they are great information-seekers, while age is not a determinant regarding respondents' use of electronic resources from other sources, as well as from home of respondents. As regards the factor of gender, it was revealed from the findings of this study that male respondents had access to electronic resources use than their female counterparts, due to the fact that the men are more flexible in their accessibility and use of e-resources than their female colleagues. Also, men are more resilient and they cope better with the challenges posed on account of e-resources use than females. Another finding from this study are that gender is a determinant regarding access of respondents through the home of the respondents. Also, the Xhosas were the highest number of respondents in their utilization of e-information resources through the
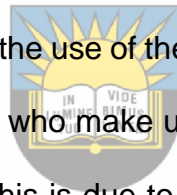
university library, due to the fact that they are the majority of undergraduate students of the respondents that were surveyed. Also, it was revealed that language has no influence on access to electronic resources through the university library, this is because the official lingua franca of both institutions is English language. Also, language is not a determinant regarding utilization of e-information resources of respondents from home of respondents, in making an important assertion on the utilization of e-information resources. It was observed that demographic factors cannot be undermined in this study. According to other empirical studies by Gilbert, (1996); Mungania, (2003), Shodt, (2005), Adetimirin (2008), demographic factors such as age and gender could be counter-productive on e-resources utilization due to the fact that users allow the demographic factors to limit their use of e-resources, and this could negatively affect their level of utilization of e-information resources.

Three demographic factors were used for this study namely age, gender and language. The result revealed (in Table 5.1) that 129 (58.9% of the respondents) were males, while the remaining numbers, i.e. 90 (41.1%) were females. This is due to the fact that males are more resilient in the use of e-resources than their female colleagues, and this reason applies to all other findings regarding gender in this study, and this assertion is also seen in Figure 5.6, that more males access electronic resources from their university/computer laboratories, offices, residences, homes, and other sources, as depicted in Figure 5.7 , Tables 5.11, 5.15, 5.21 and 5.27 respectively, as other researchers have previously reported (Kaminer, 1997, Shashani, 1997;Costa, 2000; Adomi, 2001; Rose, 2001; Rajogopal, 2003; Al-Ansari,2006; Lorence, 2007; Alao, 2008; Park, 2010; Nwezeh, 2010; Daramola, 2016).

From the findings of this study, language does not influence the utilization of e-information resources due to the fact that the official language of communication is English. As depicted from the findings of this study, 180 (75.3%) of the respondents are Xhosas, and they access e-resources more than other South African tribes, though, it does not determine the utilization of e-information resources, (this also applies to another findings). On the other hand, 71% of Zulus do not access electronic resources from homes due to the fact that they access them from other locations, such as computer laboratories (64.2%). This is because majority of respondents who use computer laboratories receive lectures from there. From the foregoing, the respondents retire from their daily laboratory work to their residences to relax and continue their school work , and this accounts for the high percentage of respondents who access e-resources from their residence (77.4%) . The university libraries in the selected institutions also provide the respondents with Wi-Fi services and e-resources (and this accounts for 76.3% of the respondents). Further, 50% of respondents, who are Xhosas access and use e-resources from other sources (as depicted in Tables 5.2, 5.8, 5.10, 5.19, 5.25), as other researchers have previously reported (Al-Ansari, 1999; Al-Helaly 1999; Ibrahim, 2004; Alampay, 2006). It was also discovered that age is one of the determinants of electronic resources use, about 119 (55.1%) and 57.9% respondents between the ages of 21-30 years predominantly made use of e-resources from their residences and homes respectively, due to the fact that they are the most ICT-compliant age category in this research. On the other hand, 42.1% 0f the respondents do not access e-resources through the university offices, while 40% of respondents made use of e-resources from other sources. Literature that support these

findings include Gilbert, (1996); Laguna, (1997); Barllan (2003); Munguna, (2003); Odogo, (2009); Ajuwon, (2015). This study also revealed the level of accessibility of respondents to e-resources from their various locations, and from the foregoing, 133(54.7%) accessed the electronic resources from their residences, this high number is due to the provision of accessible Wi-Fi at their various halls of residences, as well as 84(34.6%) of the surveyed students accessed electronic resources through the university library, while access to cybercafé and through their offices are 4 (2.3%) and 33 (20.8%) respectively, as depicted in Tables 5.4 and 5.5 respectively. The figure derived from the use of the cybercafé and other sources is very low because most of the respondents make use of free Wi-Fi that the universities provide. Findings from the quantitative data corroborate the results from the quantitative findings with additional empirical studies on demographic factors. For example, Hoskins and Hoof (2005) in their study on some factors influencing the utilization of E-resources and their influence on the achievements of second-year undergraduates of psychology in a UK-based university reported that the number of hits, length of access to e-resources also reported a similar result among respondents. Hence, many undergraduate students could be classified as under- skilled e-resource users (Bimber, 2000; Onari, 2001; Evans, 2001; Qudais, 2010 ;). Some studies have noted the Electronic resources and compatibility of electronic resources by students on their behavioural intentions based on DOI, TRA and TAM theories (Hartshorne and Ajjan, 2009). The assumption from DOI, TRA and TAM is that users are under-utilizing the e-resources for both academic and personal work. (Rogers, 1985) portrays that the real reason undergraduate students frequently make use of electronic resources from their residence, on account of the fact that their residences are

convenient and they possess free Wi-Fi services, as seen in Table 5.5. The respondents have unlimited access to the e-resources when compared to their counterparts in some universities in other African countries (Bashir et al., 2008; Ani, 2010; Adekunmisi et al., 2013).

The DOI, TRA and TAM theories guided this study objective four, which is analysed and discussed in Chapter 5. DOI, TRA and TAM research shows that there are some elements required in e-resource use namely awareness, belief, acceptance and adoption are used to evaluate the usefulness of e-resources by the undergraduate students. This theories provide deeper understanding of the level of satisfaction that users obtain from the utilization of e-information resources. The theories have been successfully applied to provide the opportunity to appraise and adopt new technologies. Awareness, belief, acceptance and adoption are the central notion of this model, and they are formed by the gap between expectation and perceived performance on the influence of demographic factors on electronic resources use.
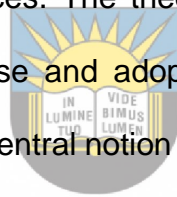
CHAPTER SIX

INFLUENCE OF ICT LITERACY SKILLS ON THE USE OF ELECTRONIC RESOURCES AMONG UNDERGRADUATE STUDENTS IN THE SELECTED UNIVERSITIES

6.1   INTRODUCTION

ICT literacy skills refer to effectiveness in searching for needed information. It is the extent to which students demonstrate proficiency in conducting e-information searching or utilize ICT facilities in the location of relevant sources of information for their academic work. The key argument of this chapter is that ICT literacy skills determine the use of electronic resources. This chapter analyzed the period of experience and proficiency of use of ICT amenities, level of ICT literacy skills and the means of ICT skills acquisition by the undergraduate students in the selected universities .The results in this chapter further elucidate an argument put forth in the previous chapter (Chapter five) that the respondents make use of electronic resources every time from their residences, and as a result of continuous usage by the respondents over time, this has greatly influenced their level of proficiency in the use of the electronic resources, and this made the students to develop their ICT literacy skills on some electronic resources.

From the foregoing, several literature have necessitated the regular appraisal of the programme which regularly necessitates accessibility to a multiplicity of information

sources and kinds by the academia (Oliver 2002). Also, Ogwu (2010) considered the proficiency level of ICT among fresh undergraduate respondents in University of Botswana and revealed that their computer proficiency was grossly inadequate. East Tennessee State University (ETSU), USA, for example reviewed its university prospectus by hosting a program for first year students to obtain ICT capacity development (Oliver 2002) and this was to ensure that when they graduate they would be able to perform several computer abilities related to using IT. Academic libraries acquire and establish both printed and electronic information sources for availability by the academia. To ameliorate the challenges of low ICT skills, therefore, students and staff of HEIs should adopt ICT to utilize current information through utilization of digital resources, e- journals and other online sources.

Also, , McGuigan (2001) stated that utilization levels of digital resources with which students enter higher education might affect their utilization of e-information resources. In order to adopt a wide array of electronic resources, students must guarantee the acquirement and training in ICT skills. The competence to retrieve and effectively utilize information is an important skill required for undergraduate academic work purposes as well as facilitating optimistic and effective use of the electronic resources while in the university. Therefore, it is opined that students would build their capacity in technological utilization of e-information resources and ICT literacy in order to access information electronically. Further, Ozoemelen (2009), opined that there were inadequate skillfulness in ICT usage, in addition to lack of search skills ranked as major setbacks among the student respondents the investigator surveyed. Several studies have been piloted on the influence of ICT literacy skills and use of utilization of digital resources (Case, 2004;

Dadzie, 2005; Akintunde, 2006; Ani, 2008; Basorun, 2011; Egberongbe, 2011; Emwata, 2013). Students who lack thesecapacities experience delays and frustration when endeavoring to complete course-related work which necessitates research, and the capability to retrieve information is essential for excellence in research. In order to utilize the benefits of electronic resources, students must ensure acquisition of knowledge of ICT literacy skills for them to exploit the use of the resources. (Blandy, 1995). As Donton (1990) proposes, the skills prerequisite for the effective utilization of e-information resources presents users with prospective benefits which are much greater than those needed for searching the printed sources, and these skills require structural acquaintance in the utilization of e-information resources and the guidelines which must be inputted in the e-information resource by the user, as well as possessing adequate knowledge of the ways in which the guidelines are interrelated. It is on this premise that Brophy (1993) posited that users seldom acknowledge the required skills in their utilization of e-information resources, stressing advantages of user-friendliness. The competence for the effective adoption and retrieval of information is a useful skill for the academic development of undergraduate students at HEIs in addition to enabling the positive and successful utilization of electronic resources, whilst at university. (Brophy, 1993).

This research objective, therefore, sought to unravel the influence of ICT literacy skills among undergraduate respondents in the selected HEIs. Also, Statistical Package of the Social Science (SPSS) was utilized in the analysis of ICT literacy skills possessed by the respondents, their level of proficiency in ICT literacy skills, as well as the means of acquisition of ICT literacy skills. Further, hypothesis was tested to ascertain the

correlation existing between ICT experience and ICT proficiency levels of the undergraduate respondents towards the utilization of e-information resources.

As put forth TAM, TRA and DOI, as the procedure of using different models for the formation of different ideas from scholars and researchers, and these ideas are sought to applicable. To gain a enhanced understanding of ICT literacy skills and utilization of digital resources among undergraduate students, TAM, TRA and DOI was employed for this research objective. TAM, TRA and DOI models have profoundly express the attitudes, beliefs, intentions and utilization of e-information resources among the undergraduate students (Venkatesh, 2003). Undergraduate students have a mental picture of their desired expectation regarding electronic resources before they access or utilize them. Also, it is expedient to state that the researcher's interview experiences with the respondents portrays that the undergraduate students have clear perception of ICT literacy skills.

6.2 CORE ARGUMENT OF THE CHAPTER

The university as an information storehouse provides access to electronic information for the purpose of meeting the information needs of the users and the society at large. Consequently, the effective utilization of these electronic information resources can make for a productive justification of its provision and derived satisfaction. Therefore, the core argument of this chapter elucidates that the productivity of respondents is dependent on two variables, namely their level of proficiency and ICT experience in the usage of digital resources. This means that the more frequent the respondents exploit

the e-resources, the more versatile and experienced they become, thus, this will ultimately have a positive influence on their proficiency. The theories adopted in this chapter are TAM, TRA and DOI, on which this study objective is anchored upon, suggests that users' utilization of technology will lead to enhanced productivity. Results from the study revealed in Table 6.1 that 71(32.1%) respondents make use of the electronic mail, and this is correlated with the use of electronic library resources (62-29.7%) both between a period of one to three years, and this has yielded in their proficiency levels. In the same vein, Desktop/laptop computers is commonly used by the respondents to do their assignments, browse and write their dissertations, and this accounts for 41 (18.4%) respondents. From the research findings, it was observed that the respondents that had ICT experience made use of the ICT facilities and electronic resources. This assertion was corroborated by the research hypothesis in Table 6.4, which states that ICT experience determines the level of ICT proficiency, which was tested to be highly significant. As supported by scholars in other empirical literature (Julien & Barker, 2009, E. L. Adam, 2009; C. V. Anunobi & Ukwoma, 2016), the low level of ICT literacy skills of the respondents has under-utilized the use of electronic resources, which has resulted in their inexperience, this is not unexpected, as many of the respondents specified that they lacked proficiency in their utilization of e-information resources. The research findings on ICT literacy skills among undergraduate students (chapter 6.3) is hereby discussed below.

6.3   RESEARCH FINDINGS ON ICT LITERACY SKILLS AMONG UNDERGRADUATE STUDENTS

Results from the study depicted that 40 (17.9%) respondents possess experience of more than 9 years on the use of desktop and laptop computers Also, 46(22.5%) and 46 (23.0%) respondents have more than 9 years' experience on the use of the web (www.) and the use of search engines respectively. Furthermore, the undergraduate students who have 4-6 years of experience in the use of digital electronic media were 53(25.7%), while 76(38.0%) respondents had proficiencies of under 1 year experience in their utilization of e-information digital repositories. It was also observed from the field results that 62(29.7%) respondents had 1-3 years' experience in the use of electronic library resources such as AJOL, JSTOR, HINARI, e-books, e-journals OARE, etc. Thus, the levels of ICT literacy skills is hereby discussed in Table 6.1 below.

Table 6.1: Levels of ICT literacy skills possessed by the Undergraduate Students

	ICT Facilities	Less than 1 year	1-3 years	4-6 years	7-9 years	Above 9 years
a.	Electronic mail (E-mail)	42 (19.0%)	71(32.1%)	41(18.6%)	30(13.6%)	37(16.7%)
b.	Desktop/laptop computers	41 (18.4%)	63(28.3%)	44 (19.7%)	35 (15.7%)	40 (17.9%)
c.	World Wide Web Document	41(20.1%	57(27.9%)	32(15.7%)	28(13.7%)	46(22.5%)
d.	Search engines	51(25.5%)	39(19.541 %)	34(17.0%)	30(15.0%)	46 (23.0%)
e.	Electronic Library Resources	60(28.7%)	62(29.7%)	47(22.5%)	21(10.0%)	19(9.1%)
f.	Audio & video communication	52(25.2%)	62(30.1%)	46(22.3%)	21(10.2%)	25(12.1%)
g.	Online repositories	76(38.0%)	56(28.0%)	32(16.0%)	17(8.5%)	19(9.5%)
h.	Digital electronic media	52(25.2%)	52(25.2%)	53(25.7%)	20(9.7%)	29(14.1%)

Table 6.1 analyzed the level of ICT literacy skills possessed by the undergraduate students in the selected universities. Most undergraduate students, i.e. 71(32.1%) make use of the electronic mail, while 62(29.7%) make use of electronic library resources, both between a period of one to three years. Also, about 41 (18.4%) make use of desktop/laptop computers. In addition, digital electronic media has been used by 29(14.1%) of the surveyed students for a period of more than nine years. Also, in the course of the in-depth research interview, 30% of the interviewees have used ICT facilities for 1-3 years, while the remaining 70% have used ICTs for 7-9 years. From the research findings, it was observed that the respondents that had ICT experience made use of the ICT facilities and electronic resources. This assertion was corroborated by the research hypothesis which states that ICT experience determines the level of ICT proficiency, which was tested to be highly significant. The levels of ICT literacy skills posed by the respondents is hereby illustrated below in Figures 6.1a and 6.1b.
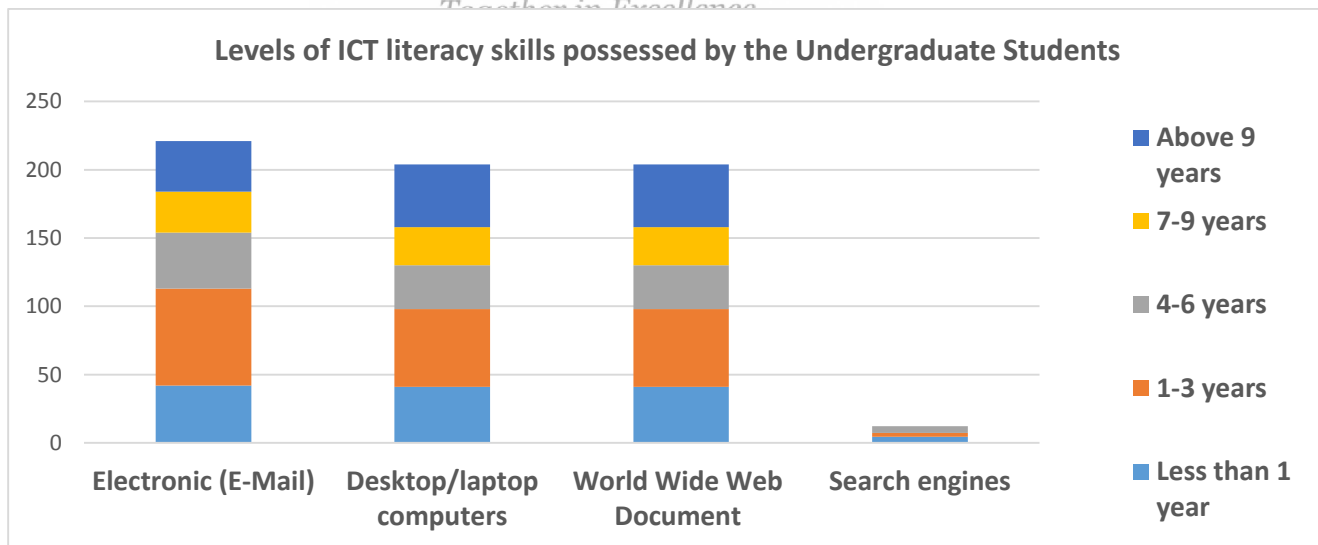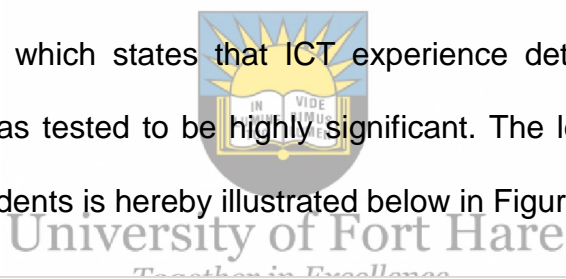
Figure 6.1a: Levels of ICT literacy skills possessed by the Undergraduate Students

Types of ICT literacy skills possessed by the Undergraduate Students
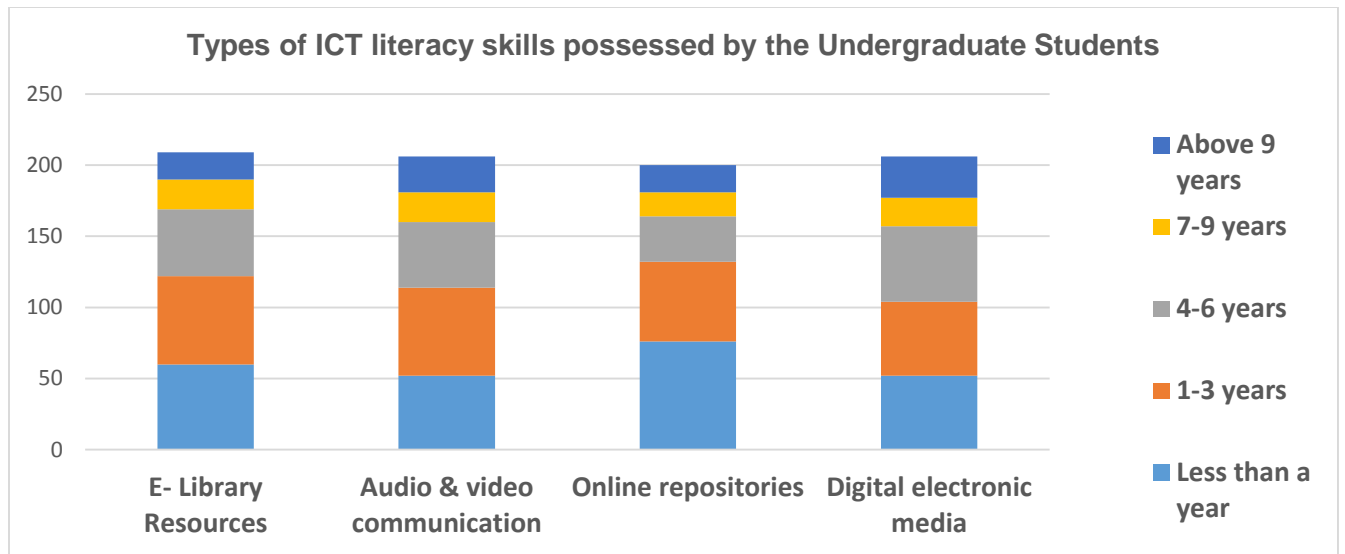
Figure 6.1b: Levels of ICT literacy skills of the Undergraduate Students

6.4 RELIABILITY ANALYSIS FOR TABLE 6.1

Analysis of reliability emphasizes on determining whether the measurement can deliver accurate, succinct and dependable results (Cooper, 2006), so as to determine whether they are in conformity to the required construct (Creswell, 2009). Further, Yin, (2008) stressed that the key objective of testing reliability levels is to diminish errors and reduce biases in a research endeavor. The results of the reliability statistics to measure the purpose of using electronic resources is stated below. The reliability analysis was measured using the Cronbach's alpha (Cooper, 2006). Cronbach's alpha evaluates the dependability of the elements in the defined instrument and utilizes the icoefficient of

internal reliability.. Cronbach's alpha specifies that the two items being assessed should have a reliability value greater than 0.6. According to the rules of thumb, recommended by George (2003) for Cronbach's alpha coefficient, reliability greater than 0.6 is satisfactory. From the table presented below, the Cronbach's alpha surveyed elements used in testing the period of usage of ICT facilities of the surveyed undergraduate students in the selected universities was 0.954, which suggests that the questionnaire used in the study in the main survey was a reliable measurement tool. Therefore, this empirical study is supported in literature by George (2003), who opined that the rules of thumb for the Cronbach's value alpha states that reliabilities greater than 0.9 are considered excellent. The reliability analysis for ICT literacy levels and the scree plot of the respondents is hereby discussed in Table 6.2 and Figure 6.2 below.

Table 6.2: Reliability Analysis for Levels of ICT literacy skills of the Undergraduate Students

Reliability Analysis	
Cronbach's alpha	0.954
No of surveyed items	8
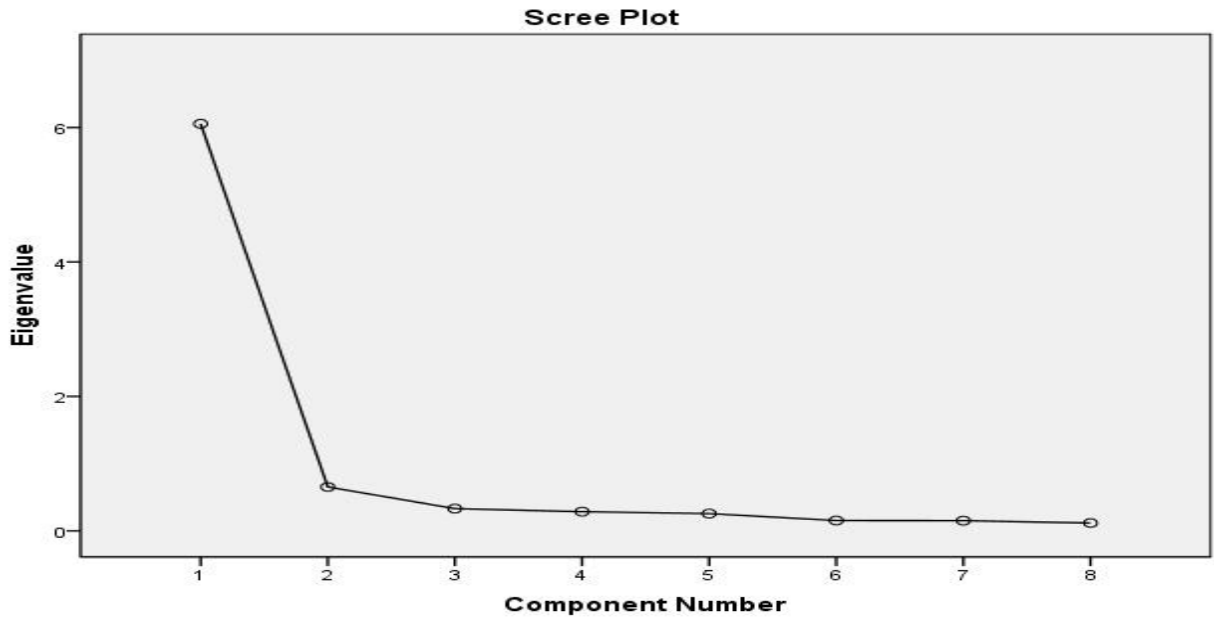
Figure 6.2: Scree plot to measure the usage of ICT facilities among the respondents

In the course of this study, the researcher examined the level of proficiency in ICT literacy skills of the undergraduate respondents in the understudied HEIs. Most undergraduate students, i.e. 91(40.6%) are excellent in their use of internet and its various features, e.g. browsing, e-mail, etc., while 70(31.3%) are proficient in the use of Microsoft packages. Furthermore, 56 (25.0%) respondents had excellent ability in their utilization of e-information resources such as internet search tools. Also, in the course of the in-depth research interview, 50% of interviewees had excellent ICT literacy skills, 30% had good ICT literacy skills, while the remaining 20% had fair knowledge of ICT literacy skills. The level of proficiency in ICT literacy is hereby discussed below.

Table 6.3: Level of Proficiency in Information and Communication Technology (ICT) Literacy Skills

S/N	ICT skills	Poor	Fair	Good	Very good	Excellent
a.	I can independently operate personal computer systems	9(3.9%)	37(16.1%)	70(30.4%)	49(21.3%)	65(28.3%)
b.	Use software for preparing work, e.g. MS Word	16(7.1%)	34(15.2%)	54(24.1%)	50(22.3%)	70(31.3%)
c.	Use software for presenting work, e.g. MS PowerPoint	16(7.1%)	34(15.1%)	62(27.6%)	45(20%)	68(30.2%)
d.	Use internet and its various features, e.g. browsing, e-mail, etc.	4(1.8%)	13(5.8%)	55(24.6%)	60(26.8%)	91(40.6%)

e.	Access information from the WWW	2(0.9%)	24(10.7%)	50(22.2%)	58(25.8%)	91(40.4%)
f.	Use an E-Learning platform	23(10.5%)	67(30.6%)	51(23.3%)	33(15.1%)	45(20.5%)
g.	Perform data analysis with a computer package	40(18.2%)	71(32.3%)	48(21.8%)	24(10.9%)	37(16.8%)
h.	Can use electronic information sources	14(6.3%)	52(23.3%)	69(30.9%)	44(19.7%)	44(19.7%)
i.	Ability to utilize e-information resources such as internet search tools	19(8.5%)	43(19.2%)	55(24.6%)	51(22.8%)	56(25.0%)
j.	I can easily initiate search strategies by using Boolean	57(25.4%)	68(30.4%)	45(20.1%)	27(12.1%)	27(12.1%)

	operators like OR, AND					
k.	Searching indexes and electronic databases like JSTOR , Google Scholar	34(15.2%)	60(26.8%)	53(23.7%)	42(18.8%)	35(15.6%)
l.	Evaluate www sources	27(12.3%)	57(26.0%)	60(27.4%)	44(20.1%)	30(13.7%)
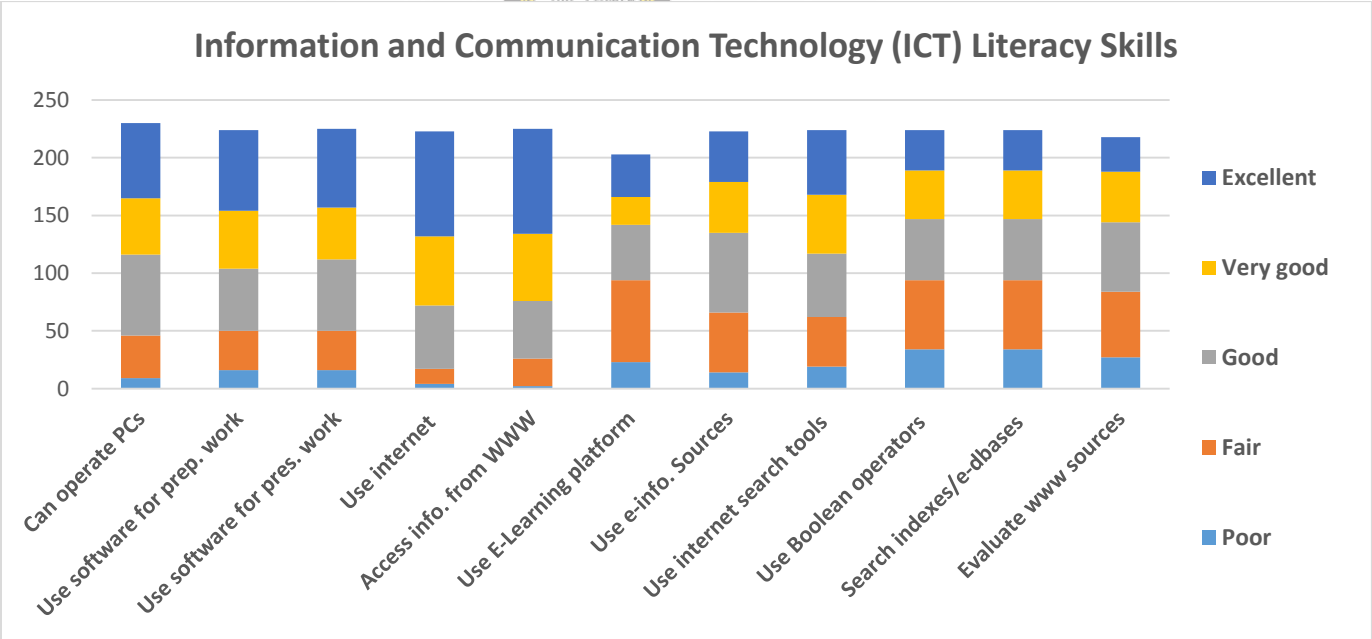
Figure 6.3: Chart showing Information and Communication Technology (ICT) Literacy Skills of the respondents

Based on the imperative research related as regards to the adoption of modern technologies using TAM and DOI, table 6.2 proposed a hypothesis that was tested in the research in a bid to understand the relationships between the variables. From the foregoing, a relational hypothesis is needed. Relational hypothesis terms the relationships between two variables. This empirical study is supported in literature by Cooper, 2006). In doing justice to this analysis, table 6.2 was scored from 1 to 5, which interprets to mean 1-Poor, to 5-excellent. The regression analysis test for Hypothesis one is hereby discussed below. In chapter 6.5.

6.5.   REGRESSION ANALYSIS TEST FOR HYPOTHESIS ONE

The following hypothesis was subjected to test at 0.05 level of significance:

H_{01-} There is no significant relationship between ICT experience and levels of ICT proficiency of undergraduate students towards their utilization of e-information resources

The regression analysis test of hypothesis two is given in Table 6.4 below

Table 6.4: Regression analysis showing relationship between ICT experience and levels of ICT proficiency of undergraduate students towards the use of electronic resources.

Coefficients

Model	Unstandardized Coefficients	Standard Coefficients		
	B / Std. Error	Beta	T	Sig.
(Constant) Period of ICT Experience	2.338/ .133 .399/ .049	.495	17.610 8.217	.000 .000
Dependent Variable: ICT PROFICIENCY				

The result in table above shows that there is significant relationship between ICT experience and levels of ICT proficiency of undergraduate students tregarding their utilization of electronic resources (p≤ .05). . This implies that ICT experience of the undergraduate students affect their proficiency levels. The hypothesis for this study is

supported in literature by Compeau (1995), Agarwal (2000), Awatt, (2011), Holden (2011) Thatcher (2012). Chapter 6.6 discusses the level of respondents' proficiency in ICT literacy skills.

6.6 LEVEL OF RESPONDENTS PROFICIENCY IN ICT LITERACY SKILLS

Literature tell us that much of today's IT involves the utilization of e-information resources, as well as computers, it is essential to examine the level of ICT literacy skills proficiency and their utilization of e-information resources. For example, a study at the University of Western Michigan showed that regular library users are inclined towards the utilization of e-information resources and computer applications than infrequent users, and also testified to higher levels of proficiency in the utilization of e-information resources and applications (Meer, 1997). Moreover, empirical studies have depicted levels of internet experience with which students are enrolled in HEIs, and as posited by McGuigan, (2001), this might determine whether or not they will utilize e-information resources electronic resources. In the course of the analysis of the questionnaires, the level of respondents' proficiency in ICT literacy skills was measured using the Principal Component Analysis technique. The findings are revealed below:

Table 6.5 Table depicting component matrix for respondents'' proficiency in ICT Literacy skills

The Table 6.5 below presents the component matrix which was extracted from the principal component analysis to test the surveyed undergraduates. From the findings as

depicted from the table, the utilization of e-information resources by the respondents for entertainment purposes (such as watching of online videos, listening to sport news, downloading of music and video, communicating by e-mail, chatting with other people) had the highest rankings which were greater than 0.5. From the forgoing, this is interpreted to mean that the respondents have excellent proficiency in ICT literacy skills as well as in the use of Microsoft packages. Also, in the course of the in-depth research interview, it was discovered that most of the interviewees have excellent proficiency in ICT literacy skills. Table 6.5 depicts component matrix for respondents'' proficiency in ICT Literacy skills Component Matrix

Table 6.5: Table depicting component matrix for respondents'' proficiency in ICT Literacy skills Component Matrix	
Use software for preparing work, e.g. MS Word	0.854
Use software for presenting work, e.g. MS PowerPoint	0.847
Can use electronic information sources	0.841
I can independently operate personal computer systems	0.815
Perform data analysis with a computer package	0.785
Utilization of e-information resources such as internet search tools, directories, etc.)	0.775
Use an E-Learning platform	0.755
Access information from the WWW	0.740

Searching indexes and electronic databases like JSTOR , Google Scholar	0.739
I can easily perform search functions with Boolean operators like OR, AND	0.723

Table 6.6 ICT LITERACY SKILLS OF RESPONDENTS

From the table presented below, the Cronbach's alpha for the number of surveyed items used in testing the ICT literacy skills of the surveyed undergraduate students in the selected universities was 0.897. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is an indicator which typifies the quantity of variance in variables that might be caused by underlying factors. High values (close to 1.0) usually conforms to the fact that a factor analysis may be valuable with your data. From the foregoing, the KMO derived for the ICT literacy skills was x. The KMO measure of sampling adequacy is 0.913, which means that it is highly significant. This is interpreted to mean that the sampling is adequate. The ICT literacy skills of respondents and the scree plot are hereby depicted below.

Table 6.6 ICT LITERACY SKILLS OF RESPONDENTS **Reliability Analysis**	
Cronbach's alpha	0.897
No of surveyed items	12
Kaiser-Meyer Olkin (KMO) Measure of sampling adequacy	0.913

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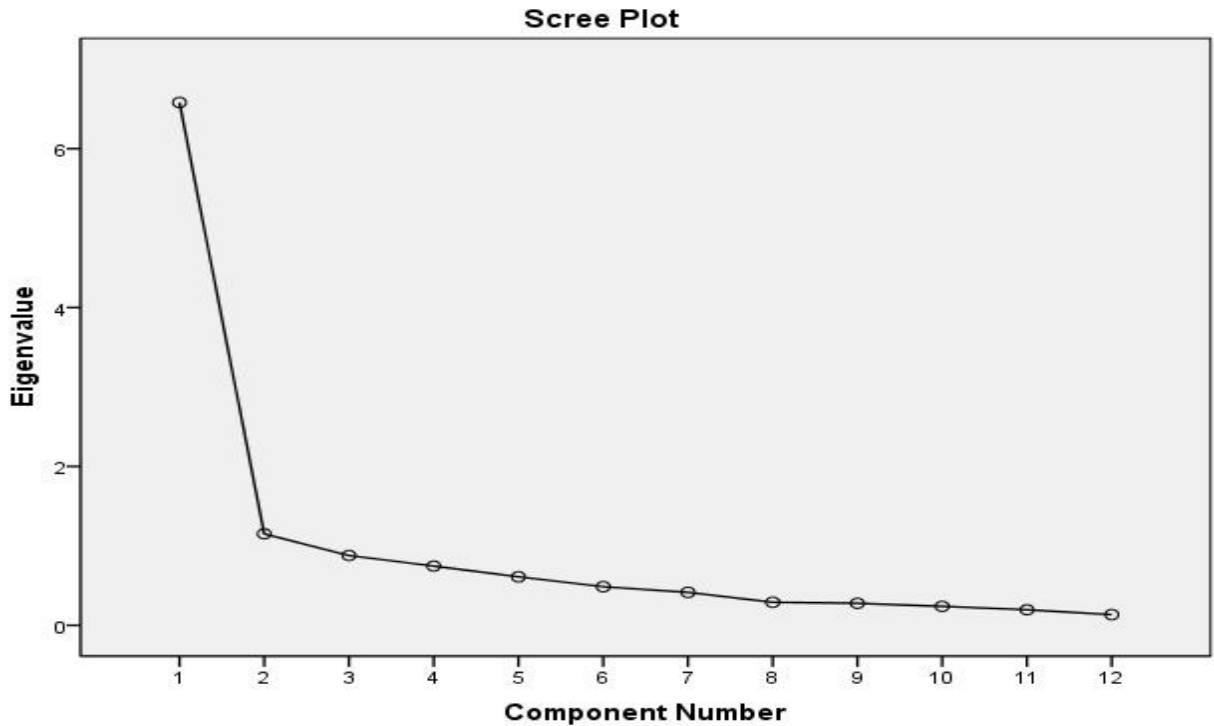
Figure 6.4: Scree plot to measure ICT literacy skills among the respondents

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6.7 DETERMINATION OF LEVEL OF PROFICIENCY IN ICT LITERACY SKILLS BY THE RESPONDENTS

The results for the level of proficiency in ICT literacy skills of the respondents was extracted using Principal Component Analysis. The rotation method used was the varimax rotation method with Kaiser Normalization. The result (as stated below) shows that the values given by the respondents regarding their ability to initiate search strategies, perform data analysis with software package and search electronic databases

were very high, namely .860, .772 and .771 respectively. This suggests that the surveyed undergraduate students had high level of proficiency in ICT literacy skills. Also, the students' ability to access information from the WWW was given as .772; Ability to use software for preparing work, e.g. MS Word (.741); Ability to use software for presenting work, e.g. MS PowerPoint (.714) and ability to independently operate personal computer systems (.706). This points to the fact that the undergraduate students were proficient in the use of computer packages such as Microsoft office in their research. Also, in the course of the in-depth research interview, it was discovered that 80% of the interviewees have excellent knowledge and use of Microsoft packages and internet use. The table of rotated component matrix is illustrated in Table 6.7 below.

Table 6.7: Table of Rotated Component Matrix

ICT Skills	Component 1	Component 2
I can easily perform search functions with Boolean operators like OR, AND	.860	
Perform data analysis with a computer package	.772	.319
Searching indexes and electronic databases like JSTOR , Google Scholar	.771	
Can use electronic information sources	.654	.531
Use an E-Learning platform	.654	.403
Evaluate www sources	.591	

Access information from the WWW		**.772**
Use software for preparing work, e.g. MS Word	.480	**.741**
Use software for presenting work, e.g. MS PowerPoint	.495	**.714**
I can independently operate personal computer systems	.458	**.706**
Utilization of e-information resources such as internet search tools, directories, etc.)	.436	.672
Use internet and its various features, e.g. browsing, e-mail, etc.		.618

6.8 MEANS OF ACQUISITION OF ICT SKILLS

Studies on the means of acquisition of ICT skills have revealed that it can be acquired through formal or informal means. Empirical studies, such as Shidi (2015), indicated that ICT skills can be acquired through formal means, which include through workshops, in-house training, and computer centers. In the course of this research, the researcher discovered that ICT skills can be acquired through formal and informal sources. The informal sources include friends, colleagues and personal development. The means of ICT skills acquisition is highlighted in Table 6.8 below.

Table 6.8 MEANS OF ACQUISITION OF ICT SKILLS

	Internet facilities	Personal development	Formal	Friends	Colleagues
a.	Electronic mail (E-mail)	121(53.1%)	50(21.9%)	38(16.7%)	19(8.3%)
b.	File Transfer (FTP)	68(3621.9%)	71(33.3%)	55(25.8%)	19(8.9%)
c.	World Wide Web Document (HTML)	80(35.7%)	80(35.7%)	41(18.3%)	23(10.3%)
d.	Search engines	84(40.6%)	59(28.5%)	43(20.8%)	21(10.1%)
e.	Global Digital Library	62(31.5%)	81(41.1%)	35(17.8%)	19(9.6%)
/f.	Audio and video communication	85(42.1%)	32(15.8%)	72(35.6%)	13(6.4%)
g.	Online repositories	69(35.0%)	66(33.5%)	49(24.9%)	13(6.6%)
h.	Digital electronic media	76(37.8%)	64(31.8%)	44(21.9%)	17(8.5%)
i.	Online database	78(37.7%)	65(31.4%)	29(14.0%)	35(16.9%)

Table 6.7: In this section, the researcher sought to know how ICT skills were acquired by the undergraduate students in the selected universities (i.e. whether through personal development, formal means, through friends or colleagues). Most undergraduate students, i.e. 121(53.1%) personally developed themselves with the electronic mail, while 71(33.3%) developed their file transfer skills through formal teaching. Also, 72(35.6%) of

the surveyed students learnt Audio and video communication through friends, while 35(16.9%) of the surveyed students learnt online database management through colleagues. Also, in the course of the in-depth research interview, 60% of the interviewees learnt to make use of electronic mail through personal development, 40% of them learnt audio and video communication through friends and colleagues. The clustered column chart illustrating the acquisition of ICT skills is shown in Figures 6.5a and 6.5b below.
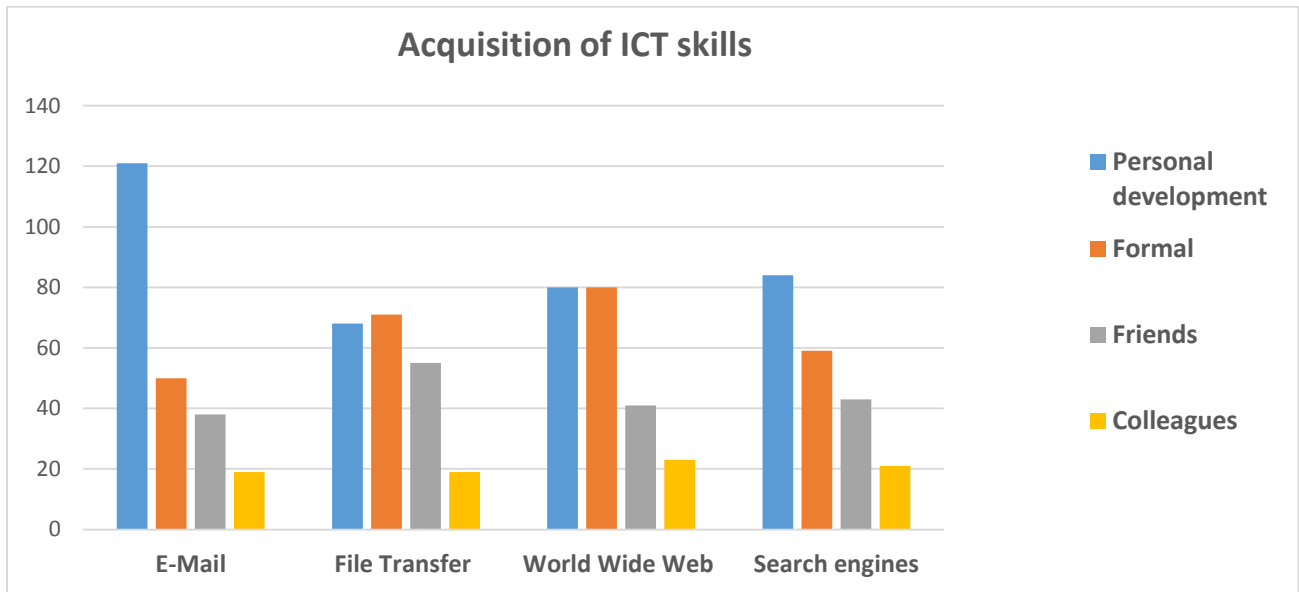
Figure 6.5a: Clustered Column Chart depicting the acquisition of ICT skills of respondents

Acquisition of ICT skills
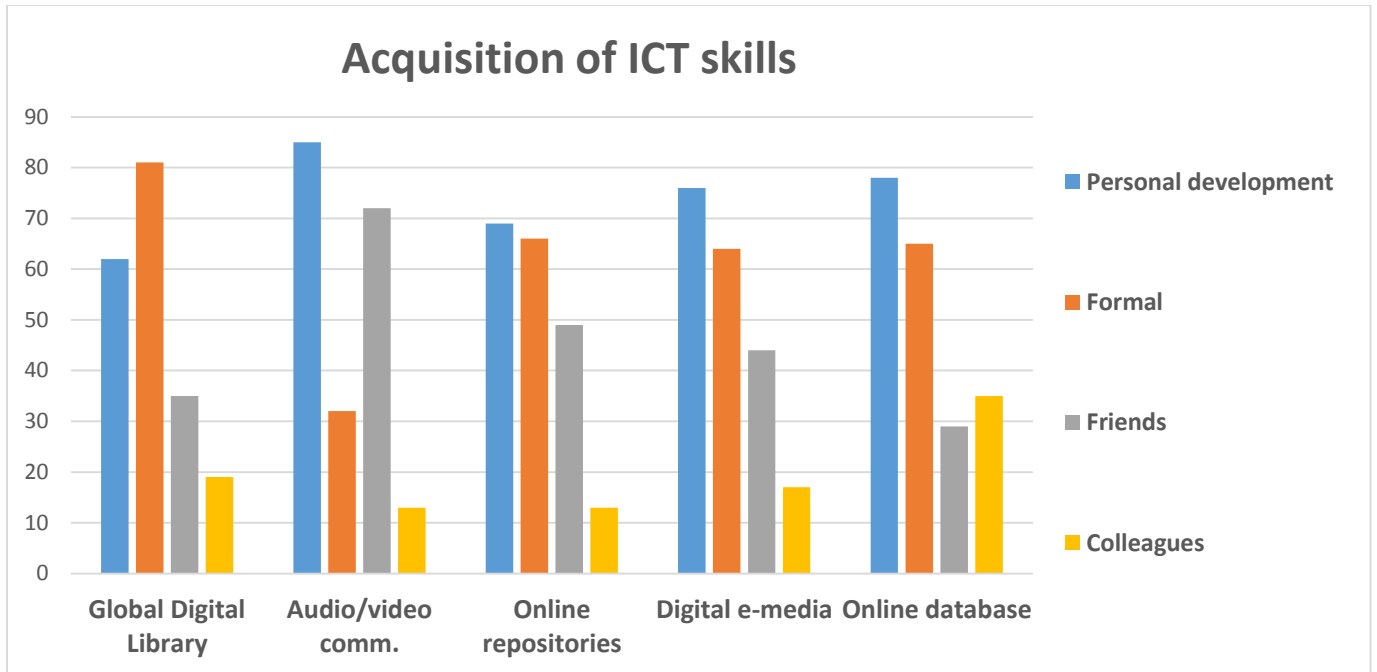
Figure 6.5b: Clustered Column Chart depicting the acquisition of ICT skills of respondents

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6.9 ICT LITERACY SKILLS OF RESPONDENTS & THEIR UTILIZATION OF E-INFORMATION RESOURCES

The choice of selecting the descriptive survey method for this research due to the fact that it strives for the utilization of e-information resources among undergraduate students in the selected universities. The data collected are the opinions of the undergraduate students on ICT literacy capabilities and the utilization of e-information resources (Table 6.8), the table reveals that 79(36.7%) of the respondents agree with the notion that inadequate knowledge of ICT skills can limit productive use of e-resources. Also, 98 (45.8%) of the respondents agree that Poor level of ICT literacy skills can hinder the use of electronic information resources. 93(43.5%) of the surveyed students agree that

possession of information literacy skills will enhance the utilization of electronic resources, but on the contrary, 4(1.9%) feel otherwise. Also, 75(34.9%) of the study population are of the opinion that ability to independently operate a computer makes it possible for one to access electronic resources. Furthermore, 90(41.7%) of the surveyed students are of the opinion that Lack of computer skills can negatively affect the ability to access electronic resources. Also, in the course of the in-depth research interview, all the interviewees were of the opinion that adequate proficiency in ICT literacy skills will enhance the utilization of e-information resources. The results also reveal that 87(40.7%) of the respondents strongly agree that ICT literacy is important in the utilization of e-information resources. It was also observed from the Table 6.8 below that ICT literacy skills is sine-qua –non requirement for electronic resources use. This opinion is also supported in empirical studies conducted by Nieminen (2002), Rajab (2005), Manda (2005), Cretchley (2007), Tella, (2008), Adetimirin, (2012). ICT literacy skills of respondents and their use of e-resources is illustrated in Table 6.9, and Figures 6.6a and 6.6b below.

Table 6.9: ICT literacy skills of respondents & their utilization of e-information resources

ICT literacy skills/E-resources use	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Inadequate knowledge of ICT skills can limit productive use of e-resources	17(7.9%)	21(9.8%)	40(18.6%)	79(36.7%)	58(27.0%)
Poor level of ICT literacy skills can hinder the use of electronic information resources	9(4.2%)	14(6.5%)	34(15.9%)	98(45.8%)	59(27.6%)
Lack of ICT competency leads to ineffective use of electronic information resources	9(4.2%)	12(5.6%)	392(15.0%)	94(44.1%)	66(31.0%)

ICT literacy is important in the use of electronic resources	6(2.8%)	7(3.3%)	24(11.2%)	90(42.1%)	87(40.7%)
Possession of information literacy skills will enhance the use of electronic resources	4(1.9%)	17(7.9%)	33(15.4%)	93(43.5%)	67(31.3%)
Ability to independently operate a computer makes it possible for one to access electronic resources e.g. EBSCOHost, Science Direct, etc.	9(4.2%)	20(9.3%)	37(17.2%)	75(34.9%)	74(34.4%)
Possession of ICT skills is a key ingredient of the ability to use MS Word and Power Point	2(0.9%)	16(7.5%)	44(20.8%0	88(41.5%)	62(29.2%)
Lack of ability to operate a computer is a deterrent to the utilization of e-	5(2.3%)	13(6.1%0	49(23.0%)	86(40.4%)	60(28.2%)

information resources, e.g. EBSCOHost, ScienceDirect, etc.					
Competencies to use a computer make it possible for you to access electronic resources e.g. EBSCOHost, ScienceDirect, etc.	6(2.8%)	19(8.9%)	44(20.6%)	89(41.6%)	56(26.2%)
Lack of computer skills can negatively affect the ability to access electronic resources	5(2.3%)	13(6.0%0	35(16.2%)	90(41.7%)	73(33.8%)
Familiarity with ICT literacy skills has a major influence on effective utilization of electronic resources	8(3.75)	12(5.6%)	40(18.7%)	87(40.7%0	67(31.3%)
Capacity building workshops on ICT literacy skills has an effect on the frequency	8(3.7%)	12(5.6%)	54(25.0%)	95(44.0%)	47(21.8%)
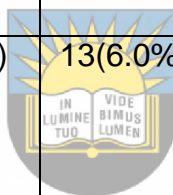
and quality of electronic resources use					
There exists a relationship between ICT literacy skills and the utilization of e-information resources	8(3.75)	12(5.6%0	54(25.0%)	95(44.0%)	47(21.8%)
There is a positive correlation existing between the ICT literacy skills and quality electronic resources use.	8(3.8%)	11(5.2%)	49(23.2%)	93(44.1%)	50(23.7%)
There is no correlation between the ICT literacy skills and effective utilization of e-information resources	33(15.7%)	65(31.0%)	50(23.8%)	41(19.55)	21(10.0%)
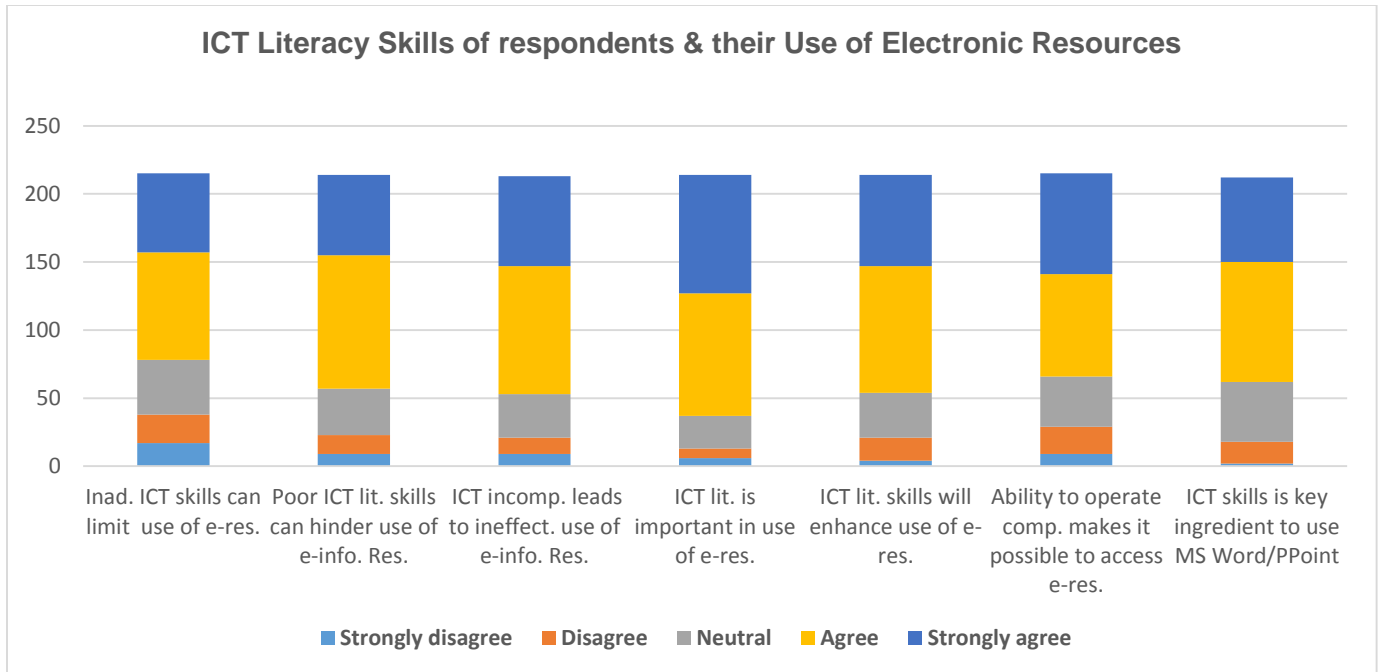
Figure 6.6a: ICT Literacy Skills of respondents & their Use of Electronic Resources
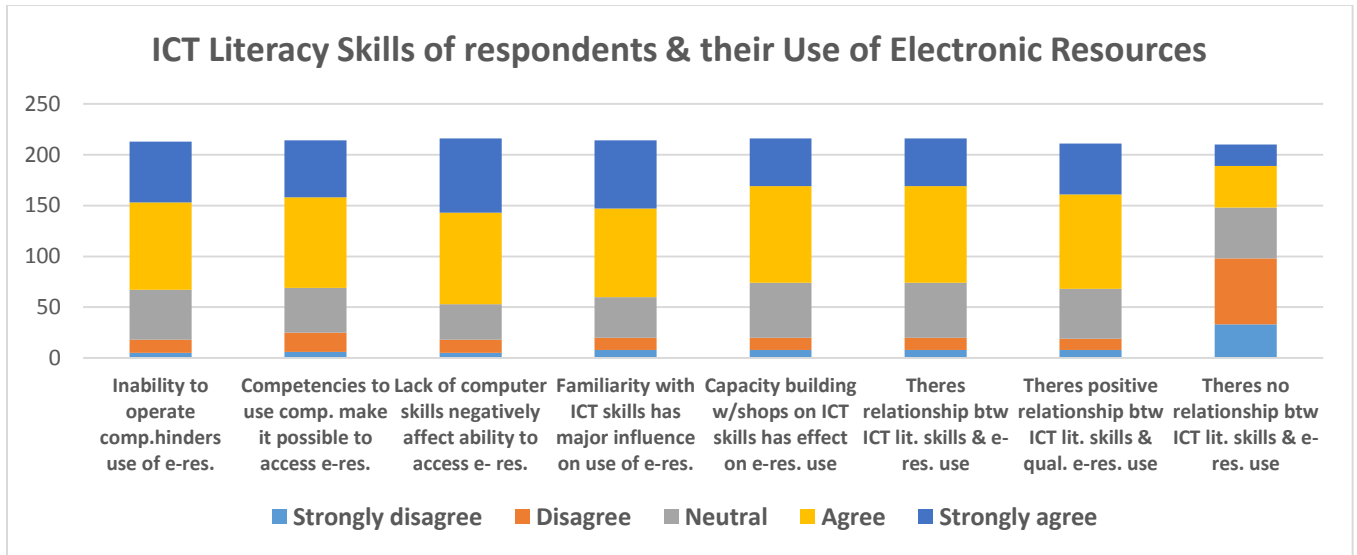
Figure 6.7b: ICT Literacy Skills of respondents & t-heir Use of Electronic Resources

6.10 CONCLUSION

This chapter addressed the issue of influence of ICT literacy skills on the exploitation of e-information resources among the undergraduate respondents in the selected HEIs. In reference to the level of ICT literacy skills and effective utilization of e-information resources, the respondents agreed with the notion that inadequate knowledge of ICT skills can limit productive use of e-resources, thereby supporting the notion that familiarity with ICT literacy skills has a major influence on effective utilization of electronic resources. In respect to ICT literacy skills by most of the undergraduate students (Table 6.1), the findings revealed that 71(32.1%) make use of the electronic mail, due to the fact that it

is the means of communication with their research colleagues and supervisors, and this is correlated with the use of electronic library resources (62-29.7%) both between a period of one to three years. Desktop/laptop computers is commonly used by the respondents to do their assignments, browse and write their dissertations, and this accounts for about 41 (18.4%) In addition, digital electronic media has been used by 29(14.1%) respondents for a period of more than nine years, while 30% of the interviewees have used ICT facilities for 1-3 years in the course of the in-depth research interview, and the remaining 70% have used ICTs for 7-9 years. This result is in conformity with the findings in Chapter 5 which states that most of the surveyed UFH and RU respondents (41.2 %) noted they mostly access the electronic resources from their residence, which interprets to mean that the higher the frequency in utilization of e-information resources by the surveyed respondents, the higher their levels of proficiency will be. From the research findings, it was observed that the respondents that had ICT experience made use of the ICT facilities and electronic resources. This assertion was corroborated by the research hypothesis which states that ICT experience determines the level of ICT proficiency, which was tested to be highly significant (See Table 6.4). Several electronic information resources that the university provides were identified for the respondents to select the ones they utilised, namely electronic mail (E-mail) desktop/laptop computers search engines world wide web document electronic library resources, audio & video communication online repositories, digital electronic media, electronic library resources, world wide web document, digital electronic media. Of all the e-resources provide, it was discovered from the findings in Table 6.1 that the most commonly used among the respondents is the electronic mail (e-mail), which recorded

71(32.1%) between the period of 1-3 years, and this has increased their ICT proficiency. The low proficiency levels of ICT literacy skills of the respondents has under-utilized the use of electronic resources, which has led to the inexperience of the respondents, this is not surprising as many of the respondents indicated that they are not proficient. (See item 5 in Appendix 3) as several student respondents may not have the necessary skills required in their utilization of e-information resources (Julien, 2009, Adam, 2009; Anunobi, 2016). Several submissions made by the surveyed UFH and RU respondents in the qualitative subdivision of the questionnaire (see Table 6.9) were mainly on ICT literacy skills of respondents & their utilization of e-information resources. The findings stated the respondents agreement to the lack of ICT competency, which leads to ineffective use of electronic information resources (98(45.8%), as well as lack of ICT competency leads to ineffective use of electronic information resources (94(44.1%). Also, the ability to independently operate a computer makes it possible for one to access electronic resources is an important opinion expressed by 74(34.4%) respondents , and these e-resources include EBSCOHost, Science Direct, etc., Furthermore, 62 (29.2%) respondents were of the view that possession of ICT skills is a key ingredient of the ability to use MS Word and Power Point, while 87 (40.7%) respondents believed that familiarity with ICT literacy skills has a major influence on effective utilization of electronic resources. The importance of capacity building cannot be undermined, as expressed by 95 (44.0%) respondents, who strongly believed that Capacity building workshops on ICT literacy skills, therefore concomitantly has a positive influence on the frequency and quality of electronic resources use. Further, inferred findings from this thesis depicts that most of the surveyed UFH and RU undergraduate respondents possess inadequate ICT

literacy skills in their utilization of e-information resources, because did not develop their capacity to utilize the e-resources provided by the universities. Although the institutions cater for the e-resource needs of the respondents, a significant number of 98 (45.8%) respondents (as seen in table 6.9) still possess poor levels of ICT literacy skills, thereby inhibiting their utilization of e-information resources. Analyzing these results using the three models namely TAM, TRA and DOI, the theories focus on the adoption of technology with intention or usage as a dependent variable (Venkatesh, 2003). Hence, this chapter concludes that when the respondents fail to utilize the provided e-resources, expectations are lessened, and satisfaction is decreased, thereby leading to underutilized e-resource capacity levels by the respondents, as summarized by the theories.

CHAPTER SEVEN

ATTITUDES AND PERCEPTION ON ELECTRONIC RESOURCES USE AMONG

UNDERGRADUATE STUDENTS

7.1   INTRODUCTION

The impact of E-resources is now ubiquitous across the globe. The e-resources are

valuable in the academic community with the aim of enhancing academic productivity. It

is argued in this chapter that attitudes and perception determine the effective utilization

of e-information resources among the undergraduate students. Further, this thesis sought

to investigate the attitudinal behavior and perceptions of undergraduate students toward

the utilization of e-information resources. (See study objective 5). The essence was to

ascertain whether their attitudes and perception have positive or negative impact on e-

resource use. The results that was presented in this chapter indicate that most of the

respondents have poor skills in data analysis with computer packages, and some

respondents cannot initiate search strategies, indexes nor electronic databases, while

some others experience difficulty evaluating www sources, and all these inadequacies

lead to negative attitudes and perceptions as well as problematic issues regarding e-resources use. Also, the researcher gathered information from the respondents through in-depth interviews in support of the fact that not all digital resources are accessed nor utilized by by the respondents', as they only utilize the e-information resources such as CD-ROMs, E-journals and E-books to do their school assignments. The findings support the assertion by scholars (Adeniran, 2013; Mosha, 2014) that the attitudes and perception of the respondents negatively affect their use of the e-resources because they do not see any need to utilize the e-resources. Hence, it is vital to posit that positive attitudes and perceptions on utilization of e-information resources concomitantly results in the utilization of the e-resources. It was also reported in this Chapter that most of the respondents usually encounter difficulties which negatively influence their attitudes and behavior towards e-resource use, From the foregoing, examples include too much information on the internet, high cost of Internet access, inadequate computer workstations, low ICT literacy skills, and financial constraint. In addition, inaccessibility of some databases was a problem experienced by many respondents, while agreed to the problem of inexperienced staff. Also, hypotheses were tested in this Chapter in order to validly make assertions based on the collected data, and the results states that perception and attitude of undergraduate students of undergraduate students affects their utilization of E-journals (as depicted in Table 7.2).These results support the core argument of this chapter, which indicates that the attitudes and perception of the undergraduate students influence their utilization of e-information resources.
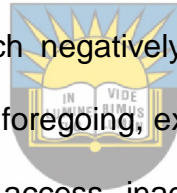
7.2 CORE ARGUMENT OF THE CHAPTER

The core argument of this chapter is that attitudes and perception of undergraduate students is greatly influenced by their utilization of e-information resources. The satisfaction of users in deriving their information needs depend on their attitudes and perception as suggested by the theoretical framework that are used for this study This means that the theoretical framework that are used for this study (TAM, TRA and DOI) are in support of the position that the most respondents utilize the e-information resources provided by the universities, but their attitudes and behaviors towards the use of these resources are unsatisfactory, which brought about the findings of this chapter. As previously reported, the attitude and perception of respondents towards e-resource use is mainly informed by their acceptance, behavioral intention, beliefs, innovation, adoption (see Table 2.2). The research outcome stated that most of the surveyed UFH and RU undergraduate respondents indicated that they utilize e-information resources in the following ways: to do school work, to chat with people, to obtain course-related information, listening to sport news, to download music and video (Table 7.3). The analysis of respondents' attitudes and perception are hereby explained below.

7.3 ATTITUDE AND PERCEPTION OF UNDERGRADUATE STUDENTS ON ELECTRONIC RESOURCES USE

The research outcome presented i this chapter specifies that many of the surveyed respondents do not adequately engage in the utilization of e-information resources for academic purposes. Other problems elucidated in the utilization of e-information resources by undergraduate students include slow downloading of academic materials from the internet, too much information on the internet, inadequate search skills, expensive internet access, and inexperienced EIR staff. These aforementioned are also highlighted in literature, such as Swain (2009); Togia, (2009); Mosha (2014). Others include inaccessibility of some databases, inadequate computer workstations, low ICT literacy skills and inadequate ICT facilities. These problems consequently have a negative influence on the academic productivity of the undergraduate students. As previously reported by other empirical literature (such as Deng, 2010; Okello-Obura, 2010; Adeniran, 2013; Abubakar, 2016; Mawere, 2018), it was also revealed that electronic resources use by undergraduate students are being under-utilized. On account of this study, the researcher has shed light on the under-utilization indices, which also forms part of the researcher's recommendation to the universities concerned. A research conducted by Rajagopal, (2012) on users' attitudes towards utilization of e-information resources in university Libraries disclosed that there is an increasing interest in the utilization of e-information resources among the engineering students of Pondicherry University. Laying credence to this is the study piloted by Brennan, (2002), who focused on the manner in which utilization of e-information resources has influenced information behavior of

academics and discovered that academics seldom stopovers at the university library, at the favor of reading more e-journals than the printed versions. This also underpinned the perception of undergraduate students on electronic resources use. Furthermore, Odongo (2013) reveals that the surveyed respondents in his study engaged in the utilization of e-information resources such as search engines, e-books, CD-ROMs, and e-journals. In addition, the study also indicated that student respondents identify the online resources to be more user-friendly than other digital resources. In the same vein, Epic (2001) stated that many users preferred the easier ways in the utilization of e-information resources such as Google and internet search. Nnadi (2011) posited form her research findings the attitude and perception of the surveyed study population of students to the use of electronic information resources. The result shows that they have positive attitude towards electronic information resources as shown by their responses which are as follows; that the utilization of e-information resources enhances access to a diverse volumes of information, it enhances accessibility to information. It also provides access to up-to-date information. It was also discovered that downloading and printing information is too expensive. This assertion is supported in literature by Ray, (1997); Adenkule, (2007); Adetimirin, (2009); Okiki (2011). The adopted framework for this chapter is discussed in chapter 7.4 below:
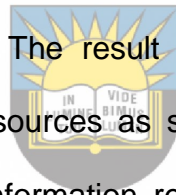
7.4 ADOPTED FRAMEWORK FOR THIS CHAPTER

The adopted framework for this chapter exemplify the postulation of the theoretical framework underpinning this study, namely TAM, DOI and TRA, because the models depict the variables utilized in this study, Thus, the adopted research framework for this chapter is exemplified in the Figure below.
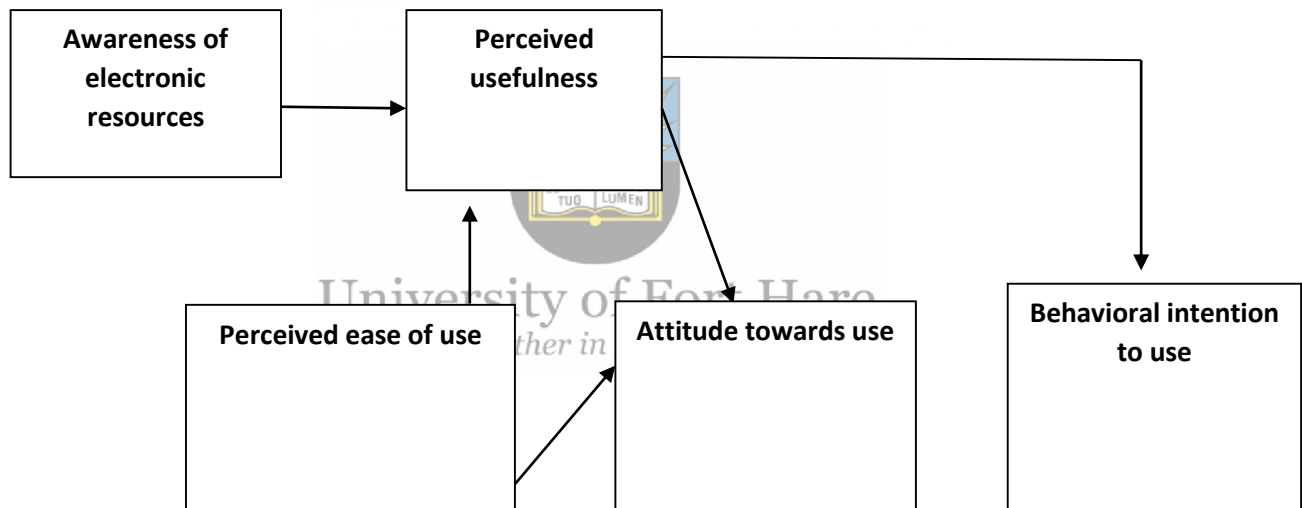
Source: TAM (Rogers, 1983)

Figure 7.1: Adopted framework for the Chapter: This construct that are the key factors for the utilization of e-information resources among the undergraduate students in the selected HEIs. From the diagram, before an electronic resource is utilized, there must be awareness and acceptance of the resource, hence, the perceived usefulness is dependent on the awareness of electronic resources, leading to the attitudinal behavior to utilize e-information resources. This explains further that the negligence of the undergraduate students on the utilization of e-information resources, which depends on their perception of and attitudes to the use of the e-resources, which is still centered on perceived usefulness. This further explains that the attitudes and perception of the respondents depend on their utilization of e-information resources. This diagram is supported by TAM, TRA and DOI, as well as other scholars such as Shih and Fang, (2004); Lin (2007), Çakmak and Ocak (2013), Davis, (1989). Below are the findings of the chapter, as shown in Table 7.1

7.5 RESEARCH FINDINGS OF THIS CHAPTER

In the Table 7.1, a preponderance of the surveyed respondents 101(71.6%) specified that they never utilized HINARI. On the contrary, 34(18.1%) of the surveyed UFH and RU respondents confirmed their usage of E-Journals every time, while 29 (15.6%) of the respondents use E-books every time. JSTOR 94(63.9%), EbscoHost 88(59.1%), OARE 98(71.0%), DOAJ 81(57.0%), AJOL 92(67.2%)   ScienceDirect 91(46.9%), ERIC 83(60.1%), SAGE 77(52.7%), PUBMED CENTRAL 85(61.2%), CD-ROMs 52(34.0%) and

OPAC 40(24.7%) were never used by the respondents. Also, in the course of the in-depth research interview, most of the interviewees make use of CD-ROMs, E-JOURNALS and E-books to do their school assignments. The frequency in the utilization of e-information resources by the respondents, as depicted in Table 7.1. and Figures 7.2a and 7.2b

Table 7.1: Frequency in the utilization of e-information resources by the Respondents

S/N	Electronic Resources	Never	Almost Never	Occasionally/ Sometimes	Almost Every time	Every time
1.	JSTOR	94(63.9%)	11(7.5%)	24(16.3%)	12(8.2%)	6(4.1%)
2.	HINARI	101(71.6%)	24(17.0%)	11(7.8%)	5(3.5%)	
3.	EBSCOhost	88(59.1%)	18(12.1%)	24(16.1%)	13(8.7%)	6(4.0%)
4.	OARE	98(71.0%)	22(15.9%)	11(8.0%)	6(4.3%)	1(0.7%)
5.	AJOL	92(67.2%)	21(15.3%)	13(9.5%)	10(7.3%)	1(0.7%)
6.	DOAJ	81(57.0%)	16(11.3%)	26(18.3%)	15(10.6%)	4(2.8%)
7.	E-JOURNALS	25(13.3%)	14(7.4%)	65(34.0%)	51(27.1%)	34(18.1%)
8.	E-BOOKS	26(14.0%)	12(6.5%)	76(40.9%)	43(23.1%)	29(15.6%)
9.	ERIC	83(60.1%)	22(15.9%)	18(13.0%)	8(5.8%)	7(5.1%)
10.	SAGE	77(52.7%)	25(17.1%)	21(14.4%)	17(11.6%)	6(4.1%)
11.	SCIENCE DIRECT	91(46.9%)	15(10.2%)	30(20.4%)	18(12.2%)	15(10.2%)

12.	PUBMED CENTRAL	85(61.2%)	26(18.7%)	21(15.1%)	5(3.6%)	1(0.7%)
13.	CD-ROM DATABASES in the library	52(34.0%)	21(13.7%)	48(31.4%)	21(13.7%)	11(7.2%)
14.	OPAC	40(24.7%)	16(9.9%)	58(35.8%)	30(18.5)	18(11.1%)
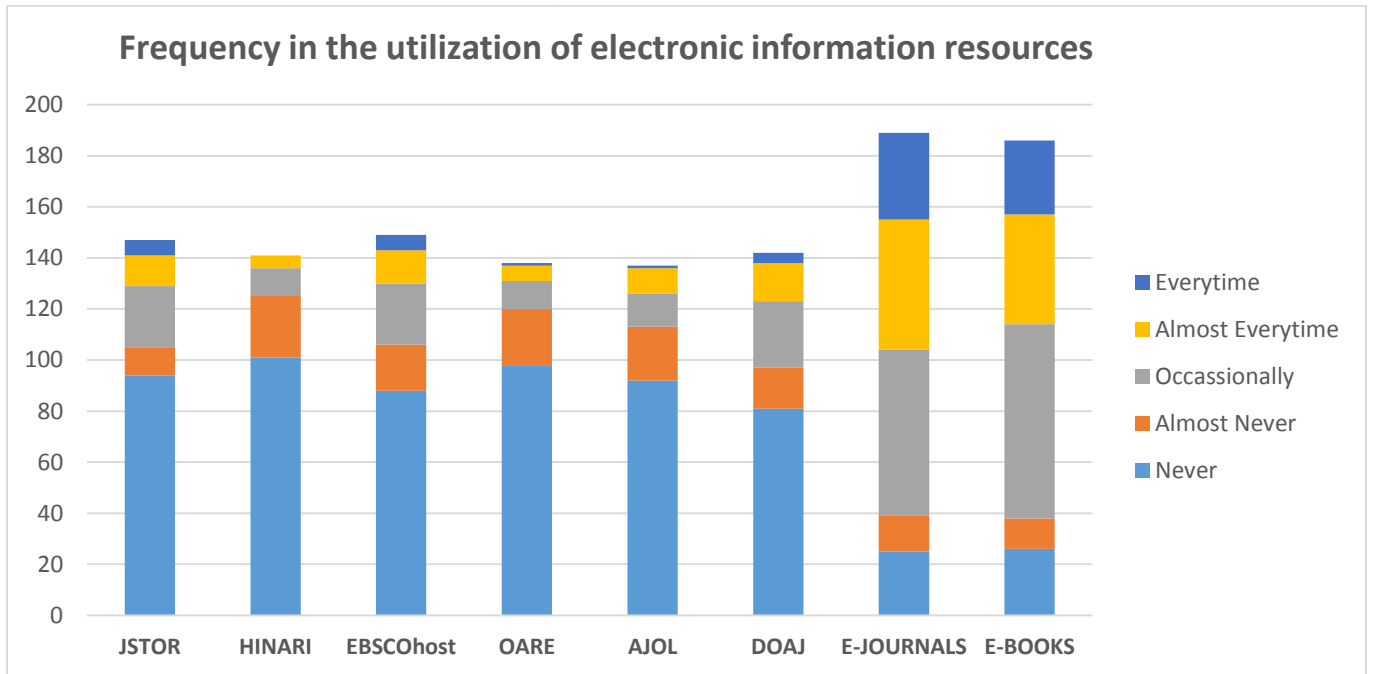
Figure 7.2a: Chart showing the frequency in the utilization of e-information resources by the Respondents
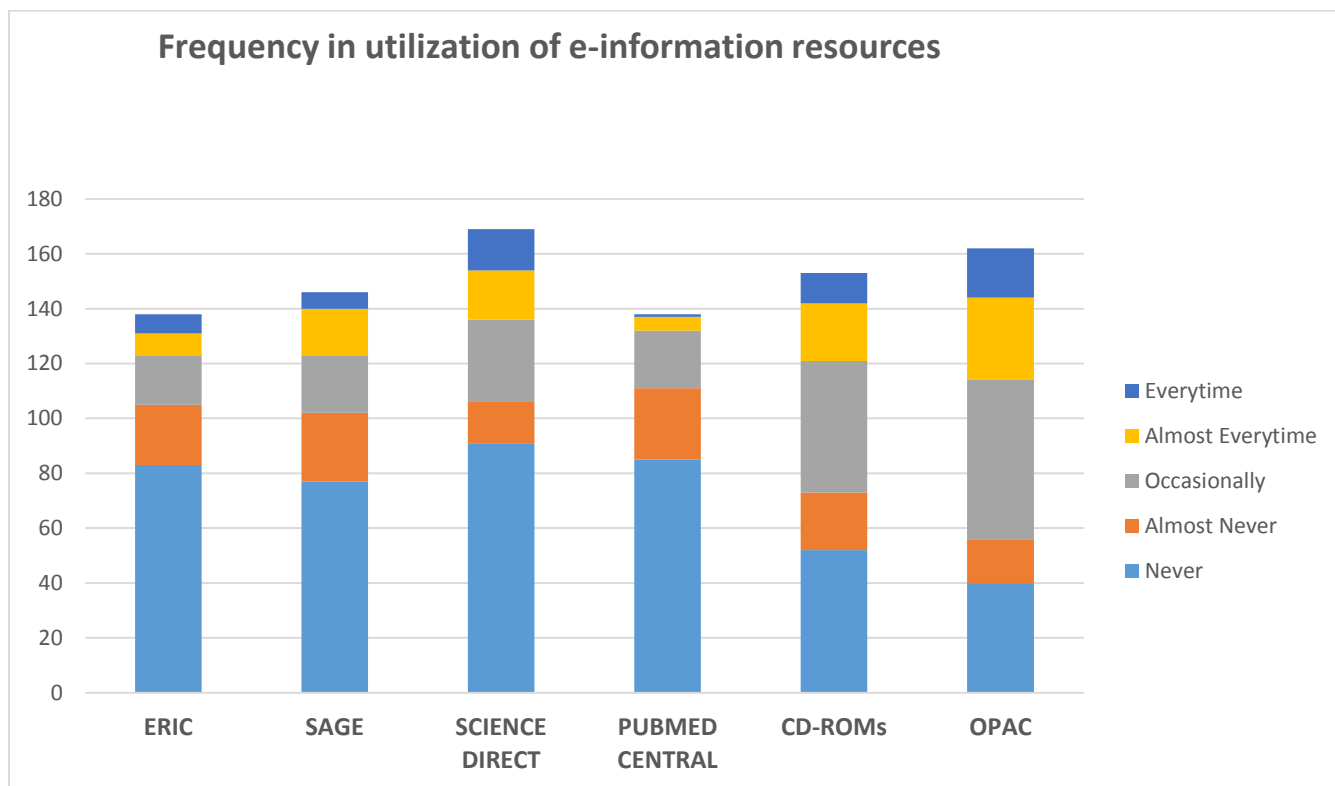
Figure 7.2b: Chart showing the frequency in the utilization of e-information resources by the Respondents

The research outcome for this study indicates that e-journals were widely used of e-information resources among the surveyed undergraduate students. This is because the statistics recorded from the table indicates that 51(27.1%) and 34(18.1%) respondents used e-journals almost every time and every time respectively. The reason for the utilization of e-information resources such as e-journals is its importance to the academic work of the undergraduate students. This viewpoint is also corroborated in empirical literature by Eason, (2000); Dadzie, (2005); Mcharazo, (2006); Basorun, (2011);

Thanuskodi, (2012); Emwata, (2013). In the study of Simon, (2015), he opined that the regularity as regards the utilization of e-information resources and service delivery of the same will match the level of awareness disclosedd. Rather, regular frequency of daily utilization of e-information resources use and twice weekly accounted for 156 (52%), while 99 or 33% utilize the e-library within 2-3 hours daily. This simply means that as respondents engage in the utilization of e-information resources, the greater their proficiency levels. This assertion is also supported by Jagboro (2003); Egberongbe (2011) Furthermore, Emwata, (2012) also shed more light on the frequency in the use of electronic resources by revealing that 38(24.1%) of the respondents he surveyed use e-journals weekly. In support of this findings, research hypothesis was tested on the attitude and perception of undergraduate students on their utilization of e-information resources such as E-journals, in which the test result was significant at ($p \leq .05$). In the course of this analysis, the table 7.1 was scored from 1-5, which interprets as 1 – never and 5- every time. The research hypothesis is stated in chapter 7.6 below.

7.6   RESEARCH HYPOTHESIS

H_{02-} There is no significant relationship between the perception and attitude of undergraduate students towards their utilization of E-journals. The regression analysis test of hypothesis three is given in the Table below

Table 7.2: Relationship between perception and attitude of undergraduate students towards their utilization of E-journals.

Coefficients

Model	Unstandardized Coefficients		Standard Coefficients		
	B / Std. Error		Beta	T	Sig.
(Constant)	2.042/	.450		4.535	.000
Attitude	.384	.138	.208	2.778	.006
Dependent Variable: E-JOURNALS					

The result in table 7.2 above illustrates that there is significant correlation regarding the perception and attitude of undergraduate students towards the frequency and their utilization of e-information resources (p≤ .05). . This implies that the perception and attitude of undergraduate students of undergraduate students affects their utilization of E-journals. This research finding is supported in the studies of Walberg, (1985); Davies, (1989), that positive attitude towards a behavior could influence actual behavior, such as in their utilization of e-information resources such as e-journals among the respondents. Also, this buttresses the empirical study of Okiki, (2012), that it is imperative to

comprehend attitude towards e-journals usage. The purpose for e-resources use is stated in chapter 7.7 below.

7.7 PURPOSE FOR USE OF ELECTRONIC RESOURCES

In the Table 7.3 below, most of the respondents 143(62.7%) indicated that they use electronic resources to do school work. Also 81(38.0%) of the surveyed respondents confirmed that they utilize e-information resources to chat with people while 115(51.8%) of the respondents use E-Resources to obtain course-related information. In addition, 69(32.2%) of the respondents were neutral in their use of E-Resources in listening to sport news, while 61(28.2%) of the undergraduate students surveyed use E-Resources to download music and video. Also, in the course of the in-depth research interview, over 70% of the interviewees make use of electronic resources mainly to obtain course-related information and entertainment purposes. The specific use of e-resources for different purposes is stated in Table 7.3 below.

Table 7.3:   Specific use of Electronic Resources for Different Purposes

Purpose of utilizing of e-information resources	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Obtain course related information (research education)	5(2.3%)	3(1.4%)	18(8.1%)	81(36.5%)	115(51.8%)
Obtain non-course related information (research education)	20 (9.8%)	17 (8.3%)	59 (28.8%)	65 (31.7%)	44(21.5%)
Course registration	14(6.7%)	9(4.3%)	37(17.8%)	72(34.6%)	76(36.5%)
Do school work	5(2.2%)	3(1.3%)	10(4.4%)	67(29.4%)	143(62.7%)
Communicate by e-mail	7(3.2%)	6(2.7%)	30(13.6%)	83(37.6%)	95(43.0%)
Chat with other people	10(4.7%)	14(6.6%)	46(21.6%)	62(29.1%)	81(38.0%)

Listen to sport news	24(11.2%)	22(10.3%)	69(32.2%)	51(23.8%)	48(22.4%)
Watch online video	15(6.9%)	18(8.3%)	39(18.1%)	69(31.9%)	75(34.7%)
To download music and video	21(9.7%)	26(12.0%)	42(19.4%)	66(30.6%)	61(28.2%)
Entertainment	17(8.0%)	18(8.5%)	46(21.6%)	71(33.3%)	61(28.6%)
Health	11(5.4%)	12(5.9%)	56(27.7%)	68(33.7%)	55(27.2%)
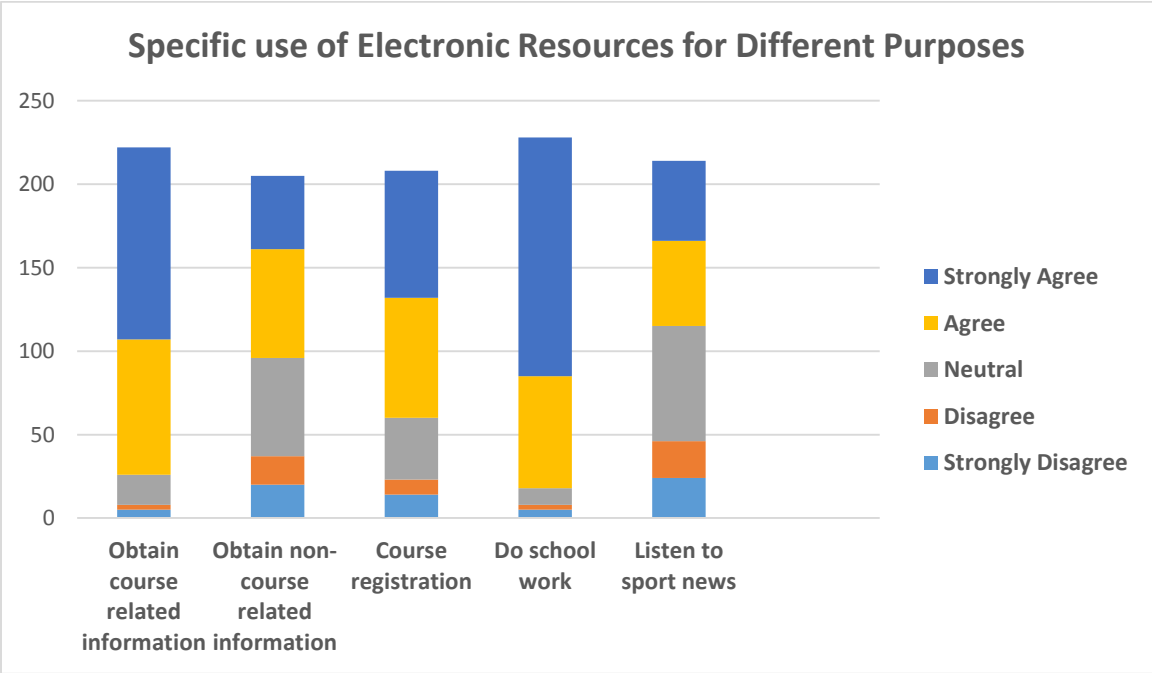
Figure 7.3a: Chart showing the specific use of electronic resources for different purposes
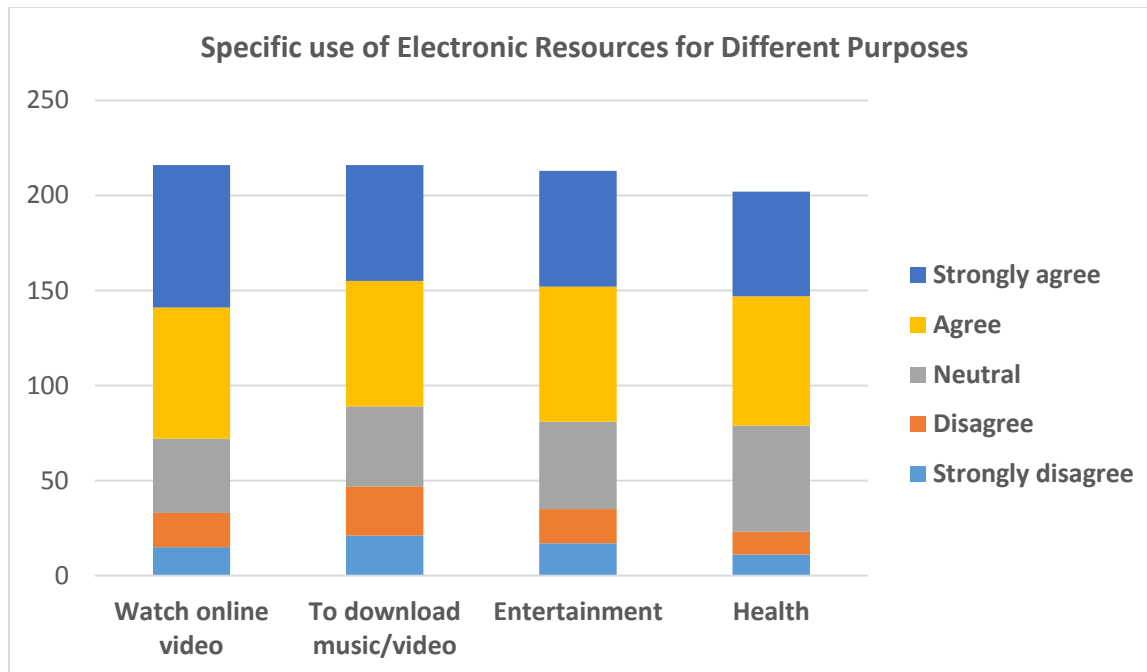
Figure 7.3b: Chart showing the specific utilization of e-information resources for different purposes

In the course of analyzing the results for table 7.2, the researcher observed that 143(62.7%) respondents utilize e-information resources for their academic work. On account of this observation, the purpose of providing the e-resource is justified. In correlation with this result, an empirical study conducted by Ozoemelem (2009), concluded in his study that students' utilization of e-information resources for school work is quite impressive. A study of HEIs revealed that students employ the fastest to satisfactory result when doing research (Valentine, 1993, Hall 2001). The attitudes and perception of the respondents is analyzed in Table 7.4 below.

Table 7.4   ATTITUDES AND PERCEPTION OF UNDERGRDUATE STUDENTS

TOWARDS E-RESOURCES USE

Attitudes and perception of undergraduate students	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
E-Resources are readily available for use	15(7%)	19(8.8%)	59(27.4)	89 (41.4%)	33(15.3%)
E-Resources are easy to use	13(6.1%)	42(19.6%)	61(28.5%)	72(33.6%)	26(12.1%)
E-Resources require technical know-how to understand	7(3.3%)	18(8.6%)	50()23.8%	100(47.6%)	35(16.7%)
E-Resources are readily	10(4.7%)	25(11.8%)	59(27.8%)	90(42.5%)	28(13.2%)

accessible for use					
ICT infrastructure is an expensive venture	11(5.4%)	28(13.7%)	69(33.7%)	70(34.1%)	27(13.2%)
I have phobia for the use of e-resources	56(26.5%)	64(30.3%)	41(19.4%)	34(16.1%)	16(7.6%)
I feel dizzy when using e-resources	64(30.2%)	67(31.6%)	43(20.3%)	25(11.8%)	13(6.1%)
The use of e-resources can negatively affect eyesight	21(9.8%)	34(15.9%)	61(28.5%)	60(28.0%)	38(17.8%)

The table below depicts the attitudes and perception of undergraduate students towards e-resources use. The result indicates that 89 (41.4%) of the surveyed undergraduate students are of the opinion that E-Resources are readily available for use. The difficulties encountered in their utilization of e-information resources discussed in chapter 7.8 below.

7.8 DIFFICULTIES ENCOUNTERED IN THE UTILIZATION OF E-INFORMATION RESOURCES

In a bid to effectively utilize the ever-increasing array of e-information resources, students must ensure the acquisition and mastery of the skills essential for their exploitation. "for students using a variety of on-line database, it is as though they were parking lot attendants, where every vehicle is not only a different make and model but has a different configuration" (Blandy,1995). In the Table 7.7 below, 57(26.6%) encountered too much information on the Internet, while 53(24.9%) respondents complained about high cost of Internet access. Furthermore, 35(16.7%) respondents were of the opinion that there were inadequate computer workstations. Also, 55(25.8%) respondents agreed to low ICT literacy skills as a difficulty, while 53(26.2%) respondents complained of financial constraint. In addition, inaccessibility of some databases was a problem experienced by 75(36.2%) respondents, while 31(14.8%) respondents agreed to the problem of inexperienced staff. This has been supported in literature by Butler (2002), Fridah (2015). The difficulties encountered while using e-resources are shown below.

Table 7.5:   Difficulties Encountered While Using Electronic Resources:

	Problems	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
A	Too much information on the Internet	21(9.8%)	32(15.0%)	37(17.3%)	67(31.3%)	57(26.6%)
b.	Lack or poor search skill	21(9.9%)	61(28.6%)	49(23.0%)	51(23.9%)	31(14.6%)
c.	High cost of Internet access	12(5.6%)	32(15.0%)	43(20.2%)	73(34.3%)	53(24.9%)
d.	Power outage	19(9.0%)	42(20.0%)	54(25.7%)	64(30.5%0	31(14.8%)
e.	Slow downloading	17(8.1%)	23(10.9%)	49(23.2%0	68(32.2%)	54(25.6%)
f.	Inexperienced staff	17(8.1%)	54(25.8%)	69(33.0%)	38(18.2%)	31(14.8%)
g.	Inaccessibility of some databases	7(3.4%)	33(15.9%)	62(30.0%)	75(36.2%)	30(14.5%)
h.	Inadequate computer workstations	13(6.2%)	34(16.25)	59(28.1%)	69(32.9%)	35(16.7%)

i.	Low Information and Communication Technology (ICT) literacy skills	21(9.9%)	47(22.1%)	62(29.1%)	55(25.8%)	28(13.1%)
j.	My religion does not support the use of the internet	104(48.4%)	64(29.8%)	27(12.6%)	10(4.7%)	10(4.7%)
k.	Inadequate Information and Communication Technology (ICT) facilities	24(11.3%)	58(27.4%)	58(27.4%)	57(26.9%)	15(7.1%)
l.	Financial constraint	21(10.4%)	35(17.3%)	61(30.2%)	53(26.2%)	32(15.8%)
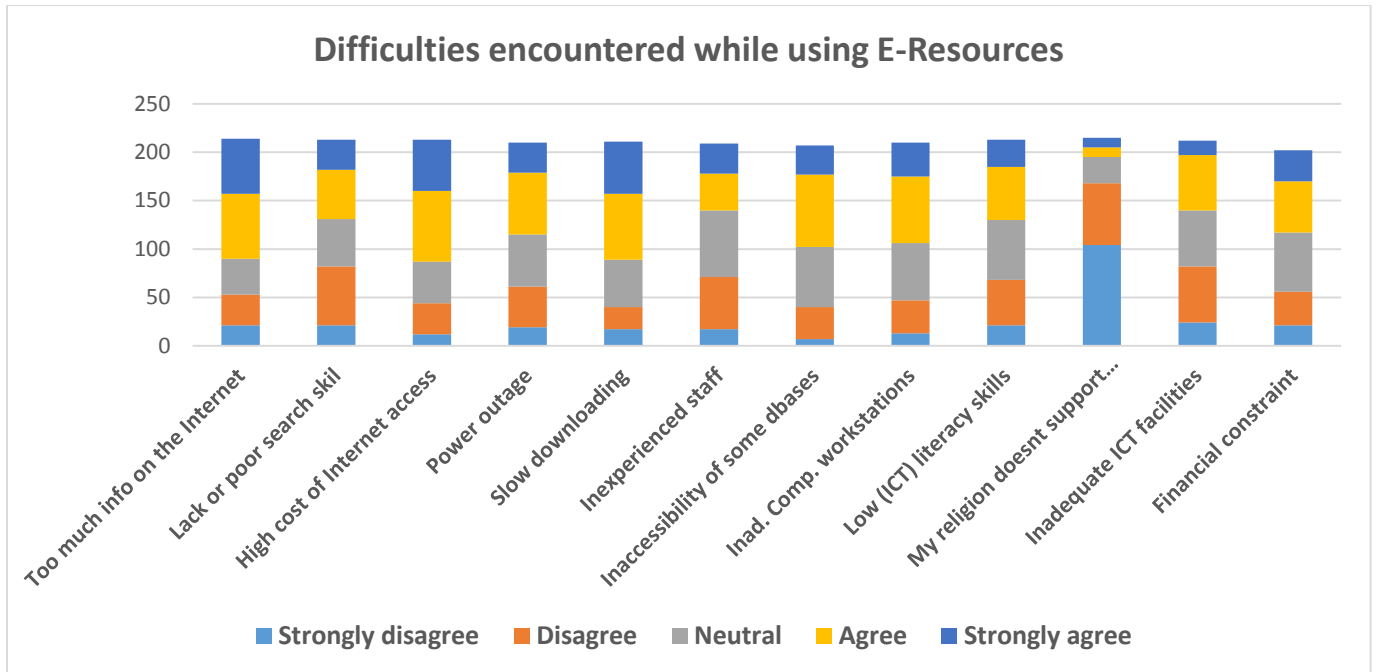
Figure 7.4 Chart showing difficulties encountered while using E-Resources

7.9 CONCLUSION

This chapter highlighted the attitudes and perception on electronic resources use among undergraduate students. As previously reported, many undergraduate students possess low levels of ICT literacy skills on their utilization of e-information resources, as depicted in Table 6.3., revealed that 40 (18.2%) respondents have poor skills in the performance of data analysis with computer packages, as well as 57(25.4%) respondents who cannot initiate search strategies, indexes nor electronic databases, while 27(12.3%) experience difficulty evaluating www sources, and all these inadequacies lead to negative attitudes and perceptions as well as problematic issues regarding their utilization of e-information

resources. The outcomes of this chapter revealed that most of the surveyed UFH and RU respondents possess low frequency levels in their utilization of electronic information resources, for example, Table 7.1 indicated that JSTOR 94(63.9%), EbscoHost 88(59.1%), OARE 98(71.0%), DOAJ 81(57.0%), AJOL 92(67.2%) ScienceDirect 91(46.9%), ERIC 83(60.1%), SAGE 77(52.7%), PUBMED CENTRAL 85(61.2%), CD-ROMs 52(34.0%) and OPAC 40(24.7%), HINARI 101(71.6%) the respondents never used the aforementioned software respectively. On the contrary, 34(18.1%) and 29 (15.6%) of the respondents affirmed that they use the E-Journals and E-books every time, this is because they make use of the e-resources to do assignments and obtain relevant literature for their coursework and dissertations. Also, in the course of the in-depth research interview, (as found in Appendix 3, item 2), most of the interviewees make use of CD-ROMs, E-JOURNALS and E-books to do their school assignments. The findings support the assertion that the attitudes and perception of the respondents negatively affect their use of the e-resources because they do not see any need to utilize other e-resources such as e-journals, CD-ROMs and e-books. Previous reports have identified the attitudes and perception of respondents to e-resource use (Swain, 2009; Togia, 2009; Deng, 2010; Okello-Obura, 2010; Rajagopal and Chinnasamy, 2012; Adeniran, 2013; Mosha, 2014; Abubakar, 2016; Mawere, 2018). At this juncture, it is important to state that positive attitudes and perceptions on e-resource use results in the utilization of the e-resources. From the foregoing, several factors contribute to the attitudes and perception of undergraduate students to e-resource use, such as interest, awareness, beliefs, acceptance and adoption of technology, (Brophy (1993); Ray and Day, 1998; Dadzie, 2005; Okello-Obura 2010). The results from the study depicts that that a preponderance

of students graduate from HEIs lacking essential skills to cope within the challenges posed by the larger ICT-compliant society. In the same vein, scholars also noted that most users embrace the benefits of utilization of e-information resources over printed ones, and this brought about the attitudes and perception of the respondents in favor of e-journals, CD-ROMs and e-books . According to the theories identified for this study (TAM, DOI and TRA) Correspondingly, as illustrated in figure 7.1, before an electronic resource is utilized, there must be awareness and acceptance of the resource, hence, the perceived usefulness is dependent on the awareness of electronic resources, thereby resulting in the behavioral intention to utilize e-information resources. This explains further that the negligence of the undergraduate students on their utilization of e-information resources depends on their perception of and attitudes to the use of the e-resources, which is still centered on perceived usefulness.

The findings from Table 7.4 revealed that 100 (47.6%) respondents stated that e-resources require technical know-how to understand. In support of this, as analyzed in Table 7.7, 57(26.6%) respondents encountered too much information on the Internet, in addition to 53(24.9%) respondents, who complained about the high cost of Internet access. Furthermore, 35(16.7%) respondents were of the opinion that there were inadequate computer workstations, this viewpoint also aligns with 55(25.8%) respondents, who agreed to low ICT literacy skills as a difficulty, and 53(26.2%) respondents complained of financial constraint. In addition, inaccessibility of some databases was a problem experienced by 75(36.2%) respondents, while 31(14.8%) respondents agreed to the problem of inexperienced staff. This has been supported in

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literature by Butler (2002), Fridah (2015). Previous researchers have also identified attitudes and perception of respondents to e-resource use (Blandy, 1995; Dutton, 1990; Brophy, 1993; Ray, 1997, Valentine, 1993; Hall, 2001). This is the reason why the respondents find it difficult to build their capacity in ICT literacy skills that is supposed to lead to their optimal satisfaction in e-resources use. The next chapter discussed the conclusion and recommendations on ICT literacy skills and demographic factors as determinants of electronic resources use among undergraduate students in the selected universities.

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CHAPTER EIGHT

CONCLUSIONS AND RECOMMENDATIONS

8.1 INTRODUCTION

This thesis investigates ICT literacy skills and Demographic factors as determining factors pertaining to digital resources among Undergraduate Students in selected Eastern Cape HEIs in South Africa. Both universities have been selected for the study because of the inability of the undergraduate students to embrace ICT literacy skills. Consequently, this study therefore focused on the gaps as well as determine the causes of under-utilized e-information resources. Also, on account of the heterogeneous nature of the two selected institutions (i.e. University of Fort Hare comprising of mainly black students while Rhodes University students comprises majorly of white students), the researcher was of the opinion that a study of the two institutions will provide a balanced view of the state of information literacy content in South African institutions of higher learning. In order to do justice to this research, the specific objectives studied are the following:

(1) to ascertain how the respondents (i.e. the undergraduate students) in the selected HEIs in the Eastern Cape access e-information resources. (2.) To determine the influence levels of ICT literacy skills on the utilization of e-information resources by the undergraduate respondents in the selected HEIs. (3.) To determine the frequency and problems encountered in the utilization of e-information resources by the undergraduate respondents in the selected HEIs. (4.) To ascertain the contributions of demographic

factors on the utilization of e-information resources by the undergraduate respondents in the selected HEIs. (5.) To determine the perceptions and attitudes of undergraduate students towards e-resource utilization.

In a bid to unpack the study objectives, empirical and theoretical literature on Information Communication Technology Literacy skills and demographic factors as determinants of electronic resources use derived from journal articles, books and online databases, journals, and key computerized databanks, i.e. AJOL,ERIC,JSTOR, TEEAL, LanTEEAL, E-journals and E-books and Google Scholar, etc. The core argument of this study is that ICT literacy skills and demographic factors influence the under-utilization of the digital resources among the undergraduate students. It has been revealed that other scholars who have researched on related studies support the main argument of this research. On account of this, the theories adopted enhanced the overall assessment, research findings and charted the research direction for this study, with the three theories sharing the same assumption on the utilization of electronic resources. Most theorists' however have shared a common assumption on ICT literacy skills and demographic factors. The core argument of this study that ICT literacy skills and demographic factors determine electronic resources use among undergraduate students in the selected higher education institutions, and this can be seen in chapters 5.2, 6.2 and 7.2. Also, TAM, DOI and TRA as well as the empirical study helped to achieve the core argument for each chapter, which is aligned with the findings of the study.

8.2 CORE ARGUMENT OF THE THESIS

The phenomenon of reactions and feedback on ICT literacy skills and demographic factors has been of great interest to several scholars such as Cornelliussen (1997); Berg, 2002; Adetimirin (2012). The core arguments, as encapsulated in this study are two fold, which are centered on themes such as ICT literacy skills as determinants of e-resources use, and demographic factors as determinants of e-resources use among the undergraduate respondents in the selected HEIs. In the same vein, the two core arguments guiding this study include the following: Firstly, information literate individuals recognize the significance of the resource in accessing information efficiently, critically appraising information and its sources, as well as its classification, storage, manipulation, and modify information collected or produced, integrate information into their knowledge base ands utilization. This core argument is supported by the results from the hypothesis tested in this study, which explains that there is important correlation between ICT experience and levels of ICT proficiency of undergraduate students towards the utilization of digital resources (p≤ .05). This infers that ICT experience of the undergraduate students affect their proficiency levels. The hypothesis for this study is supported in literature by Compeau (1995), Agarwal (2000), Awatt, (2011), Holden (2011) Thatcher (2012). Chapter 6.6 discusses the level of respondents' proficiency in ICT literacy skills. With this result, it is concluded that the higher the proficiency level of the respondents in their use of e-resources, the more experienced they become. Secondly, the core argument pertaining to some demographic factors such as gender and age was also discussed. Odell (2000) postulated that some gender dissimilarities are depicted in attitudes and perception towards technology utilization, internet use intensity, preferred

online application and cyberspace experience. For example the study of students web use have validated the insightfulness and germaness of e-resources use, as studies on this group permits the evaluation of gender dissimilarities within an institution, in which males are more proficient in their use of e-resources than their female colleagues. This assertion is also supported in chapter five of this study (as seen in Chapter 5.3 and Table 5.1). As regards age, the core argument states that age greatly affects the use of electronic resources among the respondents. This position is also exemplified in literature, for example, Al-Saleh (2004), postulated a important connection between age and the utilization of digital resources in HEIs. Notably, older students are prone to utilize e-resources less than their younger colleagues, on account of the fact that the younger respondents were more comfortable with the adoption of new innovations of technologies. Also, Waldman, (2003) posited that age is an important variable that relates with comfort in computer and e-resources use. He further opined that younger adults were brought up with computers, and many do not even remember with time when computers were non-existent. Older students may not be as exposed to computer use as their younger colleagues, as this culminates in increased anxiety in the utilization of computers. This assertion is supported in this thesis in chapter 5.3.2 and Table 5.3. The study adopted an amalgam of the three theories namely TAM, which was formulated by Davis, 1989), Ajzen's (1980), TRA and Rogers', (1962) DOI. This is buttressed in literature by Moore, (1991); Malhotra, (1999); Agarwal, (2000); Plouffe, (2001), who opined that the applicability of the theoretical framework controls attitudinal behavior towards the adoption of new innovation or technology, and (2) facilitate the correlation between attitude and external variables (as put forward by Davis, 1989). Also, the theories

exemplify the fact that perceived behavioral control depicts students' attitudes on the existence of knowledge, resources and prospects necessary for using electronic resources. Finally, the theories reveal that there are five stages in the adoption of technology namely: 1) Knowledge: awareness of an individual's innovation or invention and the operationalization of its idea. 2) Persuasion: This is epitomized as an individual's cultivation of satisfactory or unsatisfactory attitude as regrads the invention or new phenomena. 3) Decision: Individual involves in activities that culminates in a choice of adoption or rejection of innovation. 4) Implementation: Individual's utilization of an invention. 5) Confirmation: Individual assesses innovation-decision results that have already been made.

The findings of this research is well situated within the relevant literature reviewed for this study. The research model illustrated in the study is offered as an original model fabricated by the researcher, and the model is titled "Proposed new interactive model on electronic resources use", (as seen in Figure 8.1) which depicts the argument supported by the results derived from the study. While the figure 8.1 provided the theoretical springboard upon which the argument of the study is hinged upon, the results are fitted into the general framework on ICT literacy skills and demographic factors as determinants of e-resources use among the undergraduate students in the selected universities.

8.3 SUMMARY OF RESEARCH METHODOLOGY

In the course of this study, there was the need to be guided by an appropriate research paradigm. In the light of this, the interpretivist paradigm was used, which is also extensively adopted in qualitative research. Interpretivists epitomize human behavior as multifaceted and cannot be sufficed by probability or predictive models. It depends on conditions and is determined by environmental factors. Human behavior is thus influenced by numerous factors which are substantially subjective or biased in nature. Therefore interpretivists believe in reviewing human attitudinal behaviour in the daily life rather than in the controlled environment. To summarize interpretivism, Gathano, (2009) disclosed that interpretivism is therefore governed by subjectivity on account of human factor, and studying human behavior in a real-life setting, which is aligned to the theoretical framework of this study. This paradigm represents reality, having its own values and it is an essential prototype which provides explanation, geared towards the emancipating and developing knowledge frontiers. To summarize interpretivism, we can say that interpretivism is administered by subjectivity, on account of human factor and studying human attitudinal behavior in a complex digital age era, as illustrated by the TAM and TRA models. The present study employed a survey research design in examining ICT literacy skills and demographic factors on electronic resources use among the undergraduates in the selected Eastern Cape universities, as conformed to the interpretivist paradigm, "a survey research design follows a deductive approach in which the researcher begins with a theoretical or research problem and ends with empirical

measurement and data analysis" (Gabriel, 2013). Survey refers to a procedure in which a subcategory of the population is chosen to answer the survey questions; the information collected can then be generalized as the opinion of the entire study population. Furthermore, the sample survey technique was adopted because it is cost-effective and efficient means of gathering information about a population. Also, Survey sampling makes it possible to accurately estimate the characteristics of a target population without interviewing all members of the population. Similar studies have employed a survey research design to understand the ICT literacy skills and demographic factors on electronic resources use (Gui, 2007; Obura, 2008; Herring, 2010; Quadri, 2012; Ilogho, 2014; Adekannbi, 2016). The population of focus in this study comprised of the undergraduate students in UFH and RU. The research methods include descriptive statistics, frequency distribution, percentage, Principal Component Analysis (PCA), and Pearson Chi-square were utilized in the quantitative data analysis. Pearson correlation analysis was employed to ensure present correlations among variables, while the Cronbach's Alpha quantified the reliability of questionnaire items on ICT literacy skills and electronic resources use among undergraduate students in the surveyed institutions. Also, Kaiser-Meyer-Olkin (KMO) Test was used. KMO is a measure of how suited your data is for Factor Analysis. The KMO test measured sampling adequacy for all the variables used in this study, and they were all statistically found to be adequate.

8.4 SUMMARY OF FINDINGS

This study shows that undergraduate students are under-utilizing some of the electronic resources in the selected universities. In order to do justice to this, this research consists of eight chapters that unpack the study objectives. The findings of this thesis was the logical outcome of the research findings, as presented in this study. The first chapter offers the background to the aim of this study, which is ICT literacy skills and demographic factors as determinants of electronic resources use among undergraduate students in the Universities of Fort Hare and Rhodes. The second chapter presents the theoretical framework, where theoretical models that supported ICT literacy skills and demographic factors as determinants of electronic resources are discussed, and these include: DOI Theory, TAM and the TRA. The adoption of DOI, TRA and TAM, and in this research sought to discover the ICT literacy skills and demographic factors as determinants of electronic resources use among undergraduate students in University of Fort Hare and Rhodes University, Eastern Cape, South Africa. There are several theories that have been posited to try and explain the adoption and usage of technological innovations by intended users in ICT literacy skill and electronic resources research were used as the theoretical foundations to underpin the study. Chapter Three provides a review of related literature and also on broader issues concerning Empirical and theoretical literature on Information Communication Technology Literacy skills and demographic factors as determinants of electronic resources use. The study covers literature on related, cognate

and broader issues. This chapter is organized according to the research objectives, variables gleaned from the models underpinning the study in Chapter Two and Table 2.1 on theoretical framework and broader issues to the research problem. The review of the literature is therefore organized around the following themes (1) Accessibility of Electronic information resources among undergraduate students: Cases of Universities of Fort Hare and Rhodes (2.) ICT literacy skills on the use of electronic information resources among undergraduate students. (3.) The use of electronic information resources among undergraduate students. (4.) The influence of demographic factors on the use of electronic information resources among undergraduate students (5.) Attitudes and perceptions of undergraduate students towards electronic information resource utilization. In Chapter Four, the research methodology is focused on the research methods adopted for this study. Chapter five elucidates some demographic factors that affect the utilization of e-information resources use. Other issues discussed centre on demographic underpinnings on e-information resource, such as language and age. From the findings, the males outnumbered the females. This is in consonance with Okhakhu (2017), who revealed in his study that the largest number of the respondents in his study were male. Furthermore, of the surveyed students, the Xhosas were the majority. Others are English, Zulus, other nationals (such as Nigerians, Ghanaians, Ugandans and Kenyans) and Afrikaans. In addition, it was also discovered that the 21 to 30 age group was highest in electronic resources use. The reason adduced for this phenomenon is due to the fact that most of the undergraduate students who are proficient in the use of electronic resources fall in this age category.

Chapter Six provides the discussion on ICT literacy skills as determinants of electronic resources use in the selected universities, and hypothesis were tested to show the relationship between ICT experience and ICT proficiency among undergraduate students. The outcome of this hypothesis is that ICT experience greatly influences the proficiency in electronic resources use. Finally, Chapter Seven presents the attitudes and perceptions of the respondents to their use of electronic resources. The findings from chapter seven reveals that the attitudes and perception of the respondents greatly influence their utilization of electronic resources. Chapter eight presents the overall summary of the findings, conclusions and recommendations of the study. Other research findings based on the study objectives are summarized below.

8.4.1. Demographic Factors as Determinants of Accessibility and Use of Electronic Resources among Undergraduate Students in the Selected Universities

The study objectives one, three and four are analyzed in chapter five, and the summarized findings from the study are highlighted:

- Most of the undergraduate students make use of electronic resources from their residences.

- Most of the respondents who make use of electronic resources were between the ages of 21 and 30 years old.

- Age has no influence on access of respondents to electronic resources through cybercafé.

- In terms of language, the Xhosas were the highest number of respondents in the use of electronic resources through the university library.

- Language has no influence on access to electronic resources through the university library.

- More male respondents had access to electronic resources use than their female counterparts.

- Age has no influence regarding access of respondents' to electronic resources through residences of respondents.

- Gender is a determinant regarding respondents' access to electronic resources through the residences of respondents.

- Gender is a determinant regarding access of respondents through the home of the respondents.

- Age is not a determinant regarding respondents' access to electronic resources from home of respondents.

- Language is not a determinant regarding access of respondents to electronic resources from home of respondents.

- Age is not a determinant regarding respondents' use of electronic resources from other sources.

8.4.2. ICT Literacy Skills among Undergraduate Students at Universities of Fort Hare and Rhodes

The study objective two is analyzed in chapter six, and the summarized findings from the study are highlighted:

- Many of the respondents possess experience of more than 9 years on the use of desktop and laptop computers. Also, other respondents that had 1-3years experience in the use of electronic library, resources such as AJOL, JSTOR, HINARI, e-books, e-journals, OARE, etc.

- Most undergraduate students are excellent n their use of the internet and ist various features such as browsing, and e-mail.

- The ICT experience of the undergraduate students affect their proficiency levels. This hypothesis was subjected to statistical test by testing the data received from the questionnaire through regression analysis.

- The undergraduate students also made use of ICT facilities was also for entertainment purposes such as watching of online videos, listening to sport news, downloading of music and videos, communicating via e-mail, and chatting with other people.

- Most undergraduate students developed their ICT literacy skills personally through the use of the electronic mail, while other respondents learnt the use of online databases through colleagues.

8.4.3. Attitudes and Perception on Electronic Resources Use among Undergraduate Students

The study objective five is analyzed in chapter seven, and the summarized findings from the study are highlighted:

- Most respondents make use of E-journals every time. Other e- resources they use include OARE, DOAJ, EbscoHost, ScienceDIRECT, ERIC, OPAC and CD-ROMs.
- There is significant correlation between the attitude and perception of the surveyed UFH and RU undergraduate students towards their effective utilization of electronic resources. This hypothesis statistically tested using regression analysis.
- Most of the surveyed UFH and RU undergraduate respondents utilize e-information resources to do school work, course registration as well as for non-course related information.
- Majority respondents strongly believed that the ability to independently operate a computer makes it possible for one to access electronic resources.
- It was also deduced form the questionnaire analysis that inadequate computer skills can negatively affect the ability of respondents to access electronic resources.

- The gender distribution of the respondents revealed that more males make use of ICT facilities than their female counterparts.

- Most respondents agree to the notion that electronic resources require technical know-how to understand, while many others are of the belief that e-resources are easy to use

- Most of the surveyed undergraduate students agree that ICT infrastructure is an expensive venture.

8.5 SUMMARY OF CONTRIBUTIONS

The study has contributed to literature on ICT literacy skills and demographic factors as determinants of electronic resources use among undergraduate students. Scholars have postulated that ICT literacy skills and demographic factors influence the use of electronic resources. This study also contributes to knowledge by providing insight into the demographic factors and skills that influence their effective use of electronic resources. Further, this study provides a clearer picture of undergraduate students' use of information technology in academic environments, thereby encouraging new directions for research on electronic information literacy in selected universities.

The study is also significant to librarians and university administrators because they need to provide electronic resources, as well as the enabling environment for undergraduate students to utilize them. This study also contributes to the academia, as it makes effort to emphasize the need for higher education institutions to establish functional ICT centers,

which will enable students have the required ICT skill. This study is intended to chart a way forward for administrators in higher education institutions, library planners, educationists, academia, and other stakeholders in order to rethink on how to improve on information service delivery through electronic resources, for better access and utilization, in addition to developing a more complete understanding of students' electronic information needs, barriers and prospects.

8.6 Implication for Existing Theory

Considering the findings summarized above, it becomes necessary to appraise the results in the light of the theoretical frameworks namely TAM, TRA and DOI on which the study was anchored. Further, the under-usage of digital resources limits the expertise of utilization by undergraduate respondents.

The demographic factors as determinants on the effective utilization of digital resources by the interviewed UFH and RU undergraduate respondents was supported by TAM and DOI in table 2.2 has revealed that that the acceptance and implementation of e-resources by the undergraduate students can be determined by some demographic factors (as seen in chapter 5). The electronic resources is valued by the majority of the respondents, the purpose that it serves in the academics and life of undergraduate students cannot be overemphasized. Another common assumption to the three models is that the awareness, belief, acceptance and adoption of electronic resources are the determining factors of behavioral intention to use e-resources among the respondents'.

In this study, it is germane to conclude that there is need for undergraduate students' to develop their ICT literacy skills and to incorporate their demographic values in their use of electronic resources. Furthermore, although the universities surveyed have provided the required e-resources for the undergraduate students, the respondents are yet to fully embrace the utilization of the e-resources due to hindrances posed by some demographic factors as well as lack of ICT literacy skills. Hence, students did not seek to optimize their utilization of e-information resources for the resolution of fulfilling their academic information and other needs, which negates the assumption of the theories that users of technology should embrace and adopt the perceived utilization of e-information resources. However, the theories used for this study met the psychological, academic, social and interpersonal needs of the respondents in order to build their capacity which the electronic resource infrastructure is basically set up to provide. Hence, to achieve the postulated goal of the theories, it is recommended that the HEIs management of the surveyed universities should create avenues for mass enlightenment campaigns on the use and benefits of E-resources among undergraduate students through training and re-training, seminars, and workshops. In order to do justice to the implementation of the theories adopted for this study, a new interactive model on e-resources use is proposed, and this would be put forward for testing and discussion in further research. It also constitutes a contribution to theory. The use of these theories in this study is remarkable to studies on electronic resources use so as to enhance productivity and professional output of its users. The new model (Figure 8.1) highlights the procedure on the adoption and utilization of e-information resources among respondents.
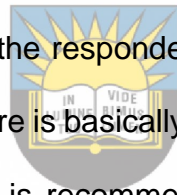
Figure 8.1: Proposed new interactive model on electronic resources use.

Awareness

Belief

Attitude

Acceptance

Adoption

Behavioral Intention

Determination

Users

Expect ation

Satisfaction

Electronic resource use

Confirmation

Perceived Usefulness and Perceived Ease of Use

University of Fort Hare

Together in Excellence
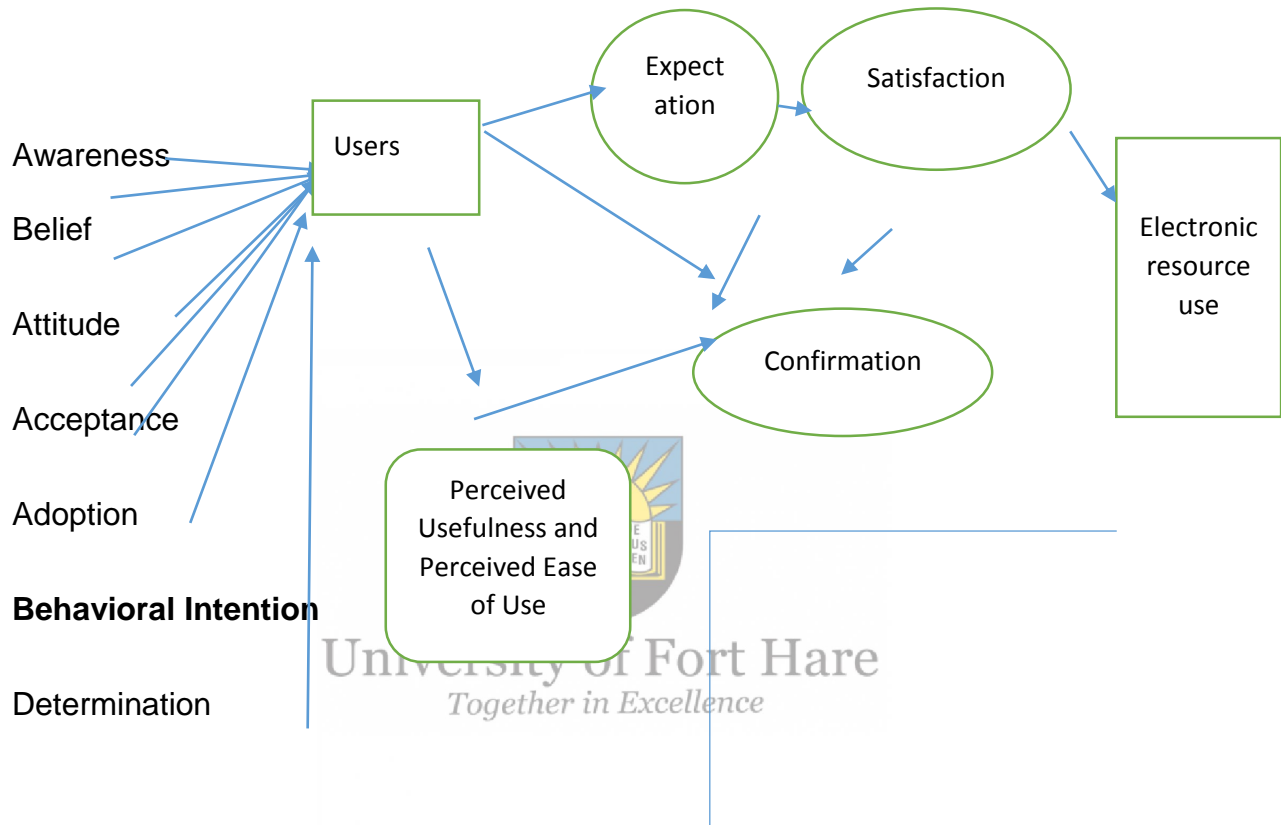
Source: Researcher, 2019

The proposed model is an interactive model explaining the adoption, acceptance and use of e-resources. Interactive means consenting or relating to continuous two-way transfer of information between a user and a central point of two-way communication system.

(Webster dictionary). This model explains the conditions influencing the information needs of its users by showing the interaction between the structural attributes and how they affect each other and in a reciprocal manner. The elements in the model are explained below and their interactive nature is elucidated.

8.7   Proposed New Interactive Model On Electronic Resources Use.

The non-recursive model is typified by the flow of causal connection in more than one direction. In the non-recursive models, not all the endogenous variables have to be fully non-recursive. The major proposition here is that due to the unidirectional nature of the recursive models, they are not accurately used in the social sciences because of its lack of feedback between factors or variables. It is on this premise therefore, as stated by Paxton, (2011) that there is either a direct or indirect correlation between the endogenous variables in the models. The proposed model for the usage of digital resources by users is assumed to be a function of several factors or variables, which include awareness, belief, attitude, acceptance, adoption, behavioral intention, determination, perceived usefulness and perceived ease of use. The main strength of the proposed non-recursive model is that once users adopt a particular information resource, it will generate a feedback effect or loop on the independent and intervening variables. For example, it was observed in this research that the respondents preferred some e-resources to others (e.g. E-journals, E-books, CD-ROMs, etc.), due to the fact that these respondents derived optimum satisfaction from the utilization of digital resources, and the resources are more

important for the performance of their academic work and other purposes, and this has consequentially resulted in a positive attitude towards the preferred e-resources. The following are attributes of the new proposed non-recursive interactive model of e-resources use.

Awareness: This is defined as knowledge or perception of situation or fact. The process of utilization of e-resources begins with awareness of the resource. In this study therefore, awareness of ICT literacy, which was analyzed in Table 6.8 came through the following means of acquisition: personal development, formal teaching, through friends and colleagues. As a result of the acquisition of ICT skills, the respondents have greatly developed their proficiency and garnered experience in e-resources use. For example, the findings revealed that most undergraduate students, i.e. 121(53.1%) personally developed themselves with the electronic mail, while 71(33.3%) developed their file transfer skills through formal teaching. Also, 72(35.6%) of the surveyed students learnt Audio and video communication through friends, while 35(16.9%) of the surveyed students learnt online database management through colleagues. Also, in the course of the in-depth research interview, 60% of the interviewees learnt to make use of electronic mail through personal development, 40% of them learnt audio and video communication through friends and colleagues.

Belief: This is defined as a recognition that something exists or is true, especially one without evidence**.** Scholars and academics alike have used TRA, and TAM model to clarify belief of users in accepting technology (Hu, Chau, Sheng and Yan, 1999; Taylor

and Todd, 1995). Also, beliefs impact attitudes, which, in turn, form intentions, which guide or dictate behaviour (Chau and Hu, 2001).

Attitudes: According to Taiwo (1998), attitudes are dispositions and feelings, prejudices or bias, preconceived ideasfears, and beliefs about any specific topic. He then cited Allport (1935), who states that an attitude is a psychological and neutral state of willingness systematized through familiarity exerting a directive or dynamic influences upon individual's response to all objects or circumstances with which it is associated. In this study, the attitudes and perception of undergraduate students towards e-resources use was analyzed in Table 7.4. The result indicates that 89 (41.4%) of the surveyed undergraduate students are of the view that digital Resources are readily available for use.

Acceptance: The action of consenting to receive or undertake something offered. In this study, acceptance is supported by TAM theory, which focuses on personal acceptance of technology by using intent or usage as a dependent variable (Venkatesh, 2003).

Adoption: The action or fact of choosing to take up, follow or use something. From the foregoing, the application of adoption in this thesis was exemplified with the DOI theory, which describes the pattern of adoption, explains the mechanism, and forecasts if a new discovery (information technology) will be effective. Adoption entails "full use of an innovation as the best course of action available" (Rogers, 1983). Rogers (1983) and (1995).

Behavioral Intention: This is well-defined as a individual's perceived likelihood or subjective likelihood that he or she will engage in a given behavior. In this study, TAM postulates that behavioral intention controls the actual use of IT, and has been empirically proven to have high legitimacy

Determination: process of establishing something exactly by calculation or research. In the course of this study, it was discovered that gender is one of the demographic factors that determine e-resources use. For example, Table 5.1 reviewed that 129 (58.9% of the respondents) were males, while the remaining numbers, i.e. 90 (41.1%) were females. Other empirical studies conducted that supports the findings of this research include Adomi (2000), who opined that more males were discovered to engage in the use of electronic resources than females. This is due to the fact that male respondents exercise greater levels of determination in the use of e-resources than their female colleagues.

Perceived Usefulness & Perceived Ease of Use: This is defined as the point to which an individual believes that using a specific system would enhance his or her performance (Davis 1989). From the foregoing, academics in HEIs and elsewhere will adopt, accept or utilize an information system vis-a-vis digital instructional media based on two beliefs (1) perceived usefulness (PU) (Davis et al., 1989; Davis,1986), and (2) perceived ease of use (PEOU). Oye, (2014) opined that attitude towards technology becomes more positive when an individual sees the usefulness and ease associated with using electronic instructional media. From the foregoing, the Table 7.1 revealed the perceived usefulness of the respondents in the study, most of the respondents 101(71.6%) indicated that they never used HINARI. On the contrary, 34(18.1%) of the respondents affirmed that they use the E-Journals every time, while 29 (15.6%) of the respondents use E-books every

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time. JSTOR 94(63.9%), EbscoHost 88(59.1%), OARE 98(71.0%), DOAJ 81(57.0%), AJOL 92(67.2%)   ScienceDirect 91(46.9%), ERIC 83(60.1%), SAGE 77(52.7%), PUBMED CENTRAL 85(61.2%), CD-ROMs 52(34.0%) and OPAC 40(24.7%) were never used by the respondents. Also, in the course of the in-depth research interview, most of the interviewees make use of CD-ROMs, E-JOURNALS and E-books to do their school assignments. Perceived usefulness is, on account of empirical studies, the stronger of the two determinants, perceived ease of use has been discovered to largely affect behavioral intention to utilize an information system through perceived usefulness (Davis, 1989).

Users: A person who uses or operates something such as product, machine, place, or facility. In this study, the users refer to the surveyed undergraduate students at UFH and RU, who are operators/users of e-resources.

Expectation: A strong belief that something will happen or be the case. It can be an attitude of expectancy, hope or anticipation. The findings of this study revealed that some expectations of the respondents were not met. This is found in Table Table 7.7 , which shows some of the problems that limit the respondents' expectation on e-resource use, and this includes too much information on the Internet, high cost of Internet access, inadequate computer workstations, low Information and Communication Technology (ICT) literacy skills, financial constraint, inaccessibility of some databases as well as problem of inexperienced staff. This has been supported in literature by Butler (2002), Fridah (2015).

Satisfaction: This is defined as the fulfilment of ones wishes, expectations or needs, or the pleasure derived from these. It is also defined as a pleasurable feeling that you get when you obtain something you wanted or when you have done something you wanted to do. In this study, it was discovered that the respondents' were disatisfied with some problems encountered in the course of their utilization of digital resources, as depicted in Table 7.7.

Confirmation: Confirmation provides proof that something is true. It is also the verification of the validity of an information. This study confirms that ICT literacy skills and demographic factors affect the use of electronic resources, and this assertion was supported by the theoretical framework adopted for this study (TAM, TRA and DOI), which state that the awareness, beliefs, acceptance and adoption of technology will enhance the respondents ICT skills as well as incorporating their demographic factors as regards e-resources utilization that will lead to the positive satisfaction.
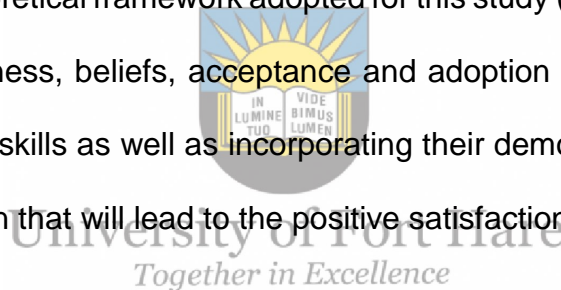
Electronic Resources Use: By definition, electronic resources (e-resources) are information deposited in electronic format in computer or computer related facilities. Thus, Haridasan (2009) defined digital resources as resources in which information is stored electronically and can be access through electronic systems and networks. This is reliable with the explanation of digital resource as a broad term for electronic information stored both offline and online (Thanuskodi, 2012). The digital resources listed for the use of the undergraduate students in this study are JSTOR, HINARI, EBSCOhost, OARE,

AJOL, DOAJ, E-JOURNALS, E-BOOKS, ERIC, SAGE, SCIENCE DIRECT, PUBMED CENTRAL, CD-ROMs and OPAC.

The contribution of the non-recursive interactive model of e-resources use is to help other researchers who will conduct similar studies. They could use and test the model for the improvement of ICT literacy skills and demographic factors as determinants of e-resources use. From a theoretical perspective, universities are to provide inclusive services to staff and students, academia and the society at large with diverse electronic information needs and policies addressing the use of information resources, ICT equipment, training, retraining and enlightenment of students and staff in ICT literacy and demographic factors, as well as allocation of funds for e-resources development.

8.8 Conclusions

Considering the results summarized above, it becomes necessary to evaluate the findings in the light of the theoretical frameworks that guided the study: TAM, TRA, andDOI (see Chapter 2). The application of the theories in this study is that awareness belief, acceptance and adoption are important factors required for technology use.

The choice of the respondents to use the electronic resources depend on the theories that were adopted for this study, as well as the perceived usefulness and perceived ease of use to predict users' attitude and behavioral intention thereby producing actual behaviour and the level of satisfaction that the user derives from the e-resource, and this will eventually lead to the use of the e-resources or otherwise. The formation of the habit that leads to the undergraduate students for underutilizing the electronic resources is as

a result of perceived ease of use of the e-resources when sourcing for information materials.

Going by the findings discussed in Chapter 6 above, the AJOL, JSTOR, HINARI, e-books, e-journals, OARE, etc. which the undergraduate students' utilized are necessary for acquiring information and knowledge for academic related purposes. The primary aim of making e-resources available has therefore been met by the universities. Also, most students communicate with other academics remotely via the e-resources, specifically through the use of chatting software, e-journals, e-books, email services, etc. Nevertheless, outcomes from the qualitative results discovered that students' utilization of digital resources is basically academic related and other personal uses.

According to the result, the more users make use of e-resources, the more proficient they become. Further conclusions were drawn from the findings of this study as they relate to each of the research objectives.

1. To ascertain how undergraduate students in selected universities in the Eastern Cape access e-resources.

   Most undergraduate students' access the e-resources from their residences. This is due to convenience, comfort, privacy and accessibility of Wi-Fi services at the residences. Other sources of accessing e-resources include offices, computer laboratories, etc.

2. To determine the level of influence of ICT literacy skills on the use of electronic resources by Undergraduate students in the selected universities.

The findings of this study revealed that most of the respondents possess experience of more than 9 years on the use of desktop and laptop computers. Also, other respondents that had 1-3years experience in the use of electronic library, resources such as AJOL, JSTOR, HINARI, e-books, e-journals, OARE, etc. Also, most undergraduate students are excellent in their use of the internet and its various features such as browsing, and e-mail. The ICT experience of the undergraduate students affect their proficiency levels. This hypothesis was subjected to statistical test by testing the data received from the questionnaire through regression analysis. The undergraduate students also made use of ICT facilities for entertainment purposes such as watching of online videos, listening to sport news, downloading of music and videos, communicating via e-mail, and chatting with other people. Most undergraduate students developed their ICT literacy skills personally through the use of the electronic mail, while other respondents learnt the use of online databases through colleagues.

3. To determine the frequency and problems encountered in the use of electronic resources by Undergraduate students in the selected universities.

The findings for objective three are as follows: The students encountered too much information on the Internet, while other respondents complained about high cost of Internet access. Furthermore, some of the respondents were of the opinion that there were inadequate computer workstations, and other respondents agreed to

low Information and Communication Technology (ICT) literacy skills as a difficulty. In addition, inaccessibility of some databases was a problem experienced by most respondents, while some respondents agreed to the problem of inexperienced staff.

4. To ascertain the contributions of demographic factors on the use of electronic resources by Undergraduate students in the selected universities.

The findings from study objective four is as follows: Most of the undergraduate students make use of electronic resources from their residences. Most of the respondents who make use of electronic resources were between the ages of 21 and 30 years old. Age has no influence on access of respondents to electronic resources through cybercafé. In terms of language, the Xhosas were the highest number of respondents in the use of electronic resources through the university library. Language has no influence on access to electronic resources through the university library. More male respondents had access to electronic resources use than their female counterparts. Age has no influence regarding access of respondents' to electronic resources through residences of respondents. Gender is a determinant regarding respondents' access to electronic resources through the residences of respondents. Gender is a determinant regarding access of respondents through the home of the respondents. Age is not a determinant regarding respondents' access to electronic resources from home of respondents.

Language is not a determinant regarding access of respondents to electronic resources from home of respondents. Age is not a determinant regarding respondents' use of electronic resources from other sources.

5. To determine the attitudes and perceptions of undergraduate students towards the use of e-resources.

The findings of objective five are as follows: Most respondents make use of E-journals every time. Other e- resources they use include OARE, DOAJ, EbscoHost, ScienceDIRECT, ERIC, OPAC and CD-ROMs. There is significant relationship between the attitude and perception of undergraduate students towards their effective utilization of electronic resources. This hypothesis statistically tested using regression analysis. Most of the undergraduate respondents utilize electronic resources to do school work, course registration as well as for non-course related information. Majority respondents strongly believed that the ability to independently operate a computer makes it possible for one to access electronic resources. It was also deduced form the questionnaire analysis that lack of computer skills can negatively affect the ability of respondents to access electronic resources. The gender distribution of the respondents revealed that more males make use of ICT facilities than their female counterparts. Most respondents agree to the notion that electronic resources require technical know-how to understand, while many others are of the belief that e-resources are easy to use. Most of the surveyed undergraduate students agree that ICT infrastructure is an expensive venture.

8.9   DISCUSSION OF PROBLEMS ENCOUNTERED

In the course of this investigation, the author encountered some minor problems. It was observed that the respondents were impatient. This was due to the fact that most of the respondents had lectures and other engagements which they hurriedly had to attend to. The researcher had to plead with the respondents so as to get their full attention in this regard. Also, many of the respondents did not have knowledge of electronic resources. The researcher had to take time to explain in detail. However, these problems did not affect the outcome of this research in any way, because the researcher was able to overcome them.

8.10   RECOMMENDATION FOR IMPLEMENTATION

In view of the above, the study made specific recommendations on how ICT literacy skills and electronic resources use among undergraduates in the selected Eastern Cape universities could be improved. Therefore, based on the findings of this study, the following recommendations are made:

➢ There is need for mass enlightenment campaign on the use and benefits of E-resources among undergraduate students through training and re-training, seminars, and workshops, since attitudinal behavior/perception analysis revealed a moderate behavior amongst the sampled students.

- Building of capacity of the undergraduate students in the use of electronic resources ICT literacy skill development programmes should be incorporated in the curriculum of the undergraduate students.

- There is need for intervention focusing on the application of some E-resources and software where the students are ranked low.

- Female students need to be encouraged to use E-resources because its usage by the male counterpart outweighs that of the female.

- Provision and empowering of Wi-Fi services in the lecture rooms, student libraries as well as the official residences of the undergraduate students.

- Provision of electronic databases, which will help to address the difficulties encountered in online internet environments.

8.11 SUGGESTION FOR FURTHER STUDY

It will be necessary for future studies to examine the application of other theories on the adoption of electronic resources use. Also, further research could be extended to academic and non-academic staff , so as to educate them on the importance and impact of ICT literacy skills and other factors that influence the use of electronic resources (other than demographic factors).

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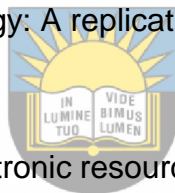
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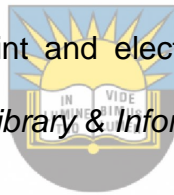
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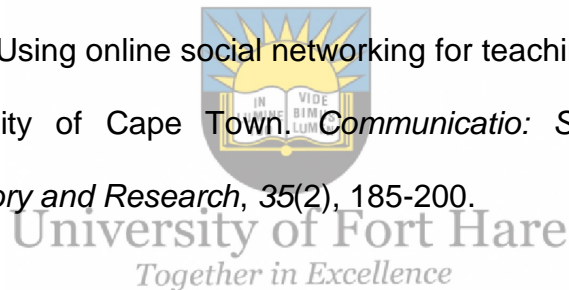
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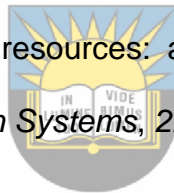
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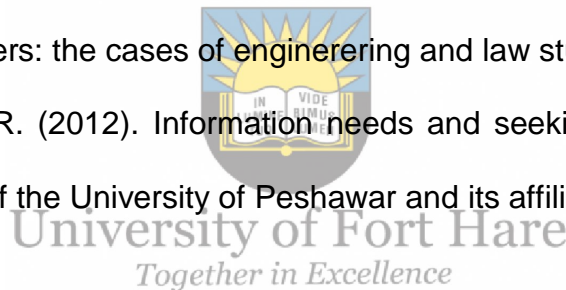
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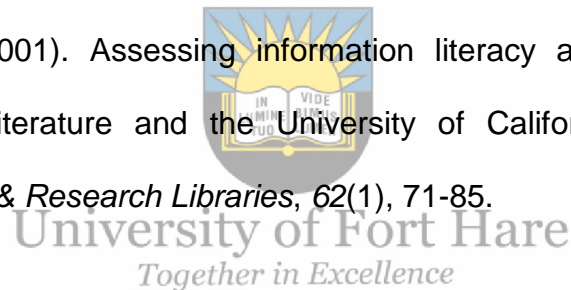
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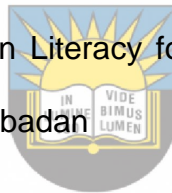
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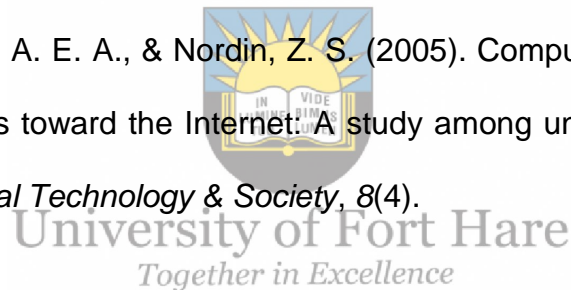
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APPENDICES

Appendix 1

University of Fort Hare
Together in Excellence

ETHICAL CLEARANCE CERTIFICATE
REC-270710-028-RA Level 01

Certificate Reference Number: NEK091SOLA01

Project title: **Information and Communication Technology Literacy Skills and Demographic Factors as Determinants of Electronic Resources use: A case of Students at selected Universities in the Eastern Cape.**

Nature of Project   PhD in Library and Information Science

Principal Researcher: Oluwayemi IbukunOluwa Olatoye

Supervisor: Prof F.H Nekhwevha
Co-supervisor: N/A

On behalf of the University of Fort Hare's Research Ethics Committee (UREC) I hereby give ethical approval in respect of the undertakings contained in the above-mentioned project and research instrument(s).   Should any other instruments be used, these require separate authorization.   The Researcher may therefore commence with the research as from the date of this certificate, using the reference number indicated above.

Please note that the UREC must be informed immediately of

- Any material change in the conditions or undertakings mentioned in the document
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research

The Principal Researcher must report to the UREC in the prescribed format, where applicable, annually, and at the end of the project, in respect of ethical compliance.

Special conditions: Research that includes children as per the official regulations of the act must take the following into account:

Note: The UREC is aware of the provisions of s71 of the National Health Act 61 of 2003 and that matters pertaining to obtaining the Minister's consent are under discussion and remain unresolved. Nonetheless, as was decided at a meeting between the National Health Research Ethics Committee and stakeholders on 6 June 2013, university ethics committees may continue to grant ethical clearance for research involving children without the Minister's consent, provided that the prescripts of the previous rules have been met. This certificate is granted in terms of this agreement.

The UREC retains the right to

- Withdraw or amend this Ethical Clearance Certificate if
    - Any unethical principal or practices are revealed or suspected
    - Relevant information has been withheld or misrepresented
    - Regulatory changes of whatsoever nature so require
    - The conditions contained in the Certificate have not been adhered to

- Request access to any information or data at any time during the course or after completion of the project.

- In addition to the need to comply with the highest level of ethical conduct principle investigators must report back annually as an evaluation and monitoring mechanism on the progress being made by the research. Such a report must be sent to the Dean of Research's office

The Ethics Committee wished you well in your research.

Yours sincerely

Professor Lindelwa Majova-Songca
Acting Dean of Research

08/09/2017
27 July 2017

Questionnaire

University of Fort Hare

Together in Excellence

Research Confidentiality and Informed Consent Form

I, **Oluwayemi IbukunOluwa OLATOYE** from the Department of Library and Information is asking people from your community / sample / group to answer some questions, which I hope will benefit your community and possibly other communities in the future.

I, **Oluwayemi IbukunOluwa OLATOYE** from the Department of Library of Information Science is conducting research regarding ICT literacy skills and demographic factors as determinants of electronic resources use among undergraduate students in selected universities in the Eastern Cape South Africa. I am interested in finding out more about how ICT literacy skills and demographic factors as determinants of electronic resources use among undergraduate students. I am carrying out this research to help improve the utilization of electronic resources among undergraduate students while creating awareness about the ICT literacy skills and demographic factors for academic or work related activities.

Please understand that you are not being forced to take part in this study and the choice whether to participate or not is yours alone. However, we would really appreciate it if you do share your thoughts with us. If you choose not take part in answering these questions, you will not be affected in any way. If you agree to participate, you may stop me at any time and tell me that you don't want to go on with the interview. If you do this there will also be no penalties and you will NOT be prejudiced in ANY way. Confidentiality will be observed professionally.

I will not be recording your name anywhere on the questionnaire and no one will be able to link you to the answers you give. Only the researchers will have access to the unlinked information. The information will remain confidential and there will be no "come-backs" from the answers you give.

INFORMED CONSENT

I hereby agree to participate in research regarding ICT literacy skills and demographic factors as determinants of electronic resources use among undergraduate students in selected universities in the Eastern Cape South Africa. I understand that I am participating freely and without being forced in any way to do so. I also understand that I can stop this interview at any point should I not want to continue and that this decision will not in any way affect me negatively.

I understand that this is a research project whose purpose is not necessarily to benefit me personally.

I have received the telephone number of a person to contact should I need to speak about any issues which may arise in this interview.

I understand that this consent form will not be linked to the questionnaire, and that my answers will remain confidential.

I understand that if at all possible, feedback will be given to my community on the results of the completed research.

…………………………..

Signature of participant

Date……………………..

Oluwayemi IbukunOluwa OLATOYE

PhD Student,

Department of Library and Information Science,

University of Fort Hare, Alice, 5700

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201516627@ufh.ac.za

SOCIO-ECONOMIC AND DEMOGRAPHIC PROFILE:

Please Mark X where appropriate

1.1 Respondent's gender

Male	Female

1.2 How old are you?

20 years and below	31-40 years
21-30 years	40 +

1. Name of Institution…………………………………………………………….
2. Department…………………………………………………………………
3. Duration of your program………………………………………………
4. Year of study……………………………………………………………….

1.3 Race:

African	Coloured
White	Indian
Other (Specify)	

1.4 What is your Language?

English	Zulu
Afrikaan	Others (Specify)
Xhosa	

1.5 Marital Status:

Single	Widowed
Married	Divorced

1.6 Employment:

Employed	Unemployed
Self-Employed	Other(Specify)

1.7. Income:

Below R 1000	R3001-4000
R 1001-2000	R4001-5000
R 2001-3000	R5001-6000
R 4001-5000	R6000+

1.9   ACCESS TO ELECTRONIC RESOURCES:

Please, indicate your response by marking X where appropriate:

I access electronic resources through:

(a) Cyber café	(e) Residence
(b) University Library	(f) Home
(c) University computer lab	(g) Other (Please specify)
(d) Office	

2.0   How often do you access electronic resources from the following locations?

Locations	Never	Almost never	Occasionally/ Sometimes	Almost every time	Every time
Cyber café					
University library					
University computer lab					
Office					
Residence					
Home					
Other (Please specify)					

2.1 ELECTRONIC RESOURCE USE

Please indicate your frequency of utilization of the following scholarly electronic resources in your university

S/N	Electronic resources	Never	Almost never	Occasionally /Sometimes	Almost every time	Every time
a.	JSTOR					
b.	HINARI					
c.	EBSCOhost					
e.	OARE					
f.	AJOL					
g.	DOAJ					
h.	E-JOURNALS					
i.	E-Books					
j.	ERIC					
k.	SAGE					
l.	SCIENCE DIRECT					
m.	LanTEEAL					
n.	PUBMED CENTRAL					

o.	CD-ROM Databases in the library					
p.	OPAC					
q.	Other (please specify)					

2.2   I specifically use electronic resources for the following purposes?

Purpose of using electronic resources	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Obtain course related information (research education)					
Obtain non-course related information (research education)					
Course registration					
Do school work					

Communicate by e-mail					
Chat with other people					
Listen to sport news					
Watch online video					
To download music and video					
Entertainment					
Health					

2.3   LEVELS OF ICT SKILLS

How long have you been using these ICT facilities?

	ICT Facilities	Less than 1 year	1-3 years	4-6 years	7-9 years	Above 9 years
b.	Electronic mail (E-mail)					
b.	Desktop/laptop computers					
c.	World Wide Web Document					
d.	Search engines					
e.	Electronic Library Resources					
f.	Audio and video communication					

g.	Online repositories					
h.	Digital electronic media					

2.4 INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) LITERACY SKILLS:

How skilled are you in the use of the following electronic resources?

S/N	ICT skills	Poor	Fair	Good	Very good	Excellent
a.	I can independently operate personal computer systems					
b.	Use software for preparing work, e.g. MS Word					
c.	Use software for presenting work, e.g. MS PowerPoint					
d.	Use internet and its various features, e.g. browsing, e-mail, etc.					
e.	Access information from the WWW					
f.	Use an E-Learning platform					
g.	Perform data analysis with a computer package					
h.	Can use electronic information sources					

i.	Ability to use internet search tools (such as search engines, directories, etc.)				
j.	I can easily initiate search strategies by using Boolean operators like OR, AND				
k.	Searching indexes and electronic databases like JSTOR , Google Scholar				
l.	Evaluate www sources				

2.5   How did you acquire the use of ICT skills?

	Internet facilities	Personal development	Formal	Friends	Colleague
A	Electronic mail (E-mail)				
b.	File Transfer (FTP)				
c.	World Wide Web Document (HTML)				

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d.	**Search engines**				
e.	**Global Digital Library**				
f.	**Audio and video communication**				
g.	**Online repositories**				
h.	**Digital electronic media**				
i.	**Online database**				

2.6. ICT LITERACY SKILLS & THE USE OF ELECTRONIC RSOURCES

ICT literacy skills/E-resources use	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Inadequate knowledge of ICT skills can limit productive use of e-resources					
Poor level of ICT literacy skills can hinder the use of electronic information resources					
Lack of ICT competency leads to ineffective use of electronic information resources					
ICT literacy is important in the use of electronic resources					

|					
Possession of information literacy skills will enhance the use of electronic resources					
Ability to independently operate a computer makes it possible for one to access electronic resources e.g EBSCOHost, ScienceDirect					
Possession of ICT skills is a key ingredient of the ability to use MS Word and Power Point					
Lack of ability to operate a computer is a hindrance to use of electronic resources e.g EBSCOHost, ScienceDirect					
Competencies to use computer make it possible for you to access electronic resources e.g EBSCOHost, ScienceDirect					
Lack of computer skills can negatively affect the ability to					

access the electronic resources					
Familiarity with ICT literacy skills has a major influence on effective utilisation of electronic resources					
Capacity building workshops on ICT literacy skills has an effect on the frequency and quality of electronic resources use					
There exists a relationship between ICT literacy skills and electronic resources use					
There is a positive relationship between the ICT literacy skills and quality electronic resources use.					
There is no relationship between the ICT literacy skills and effective utilisation of electronic resources					

2.7   DIFFICULTIES ENCOUNTERED WHILE USING ELECTRONIC RESOURCES:

What problems did you encounter while using the electronic resources?

	Problems	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
A	Too much information on the Internet					
b.	Lack or poor search skill					
c.	High cost of Internet access					
d.	Power outage					
e.	Slow downloading					
f.	Inexperienced staff					
g.	Inaccessibility of some databases					
h.	Inadequate computer workstations					
i.	Low Information and Communication					

	Technology (ICT) literacy skills					
j.	My religion does not support the use of the internet					
k.	Inadequate Information and Communication Technology (ICT) facilities					
l.	Financial constraint					
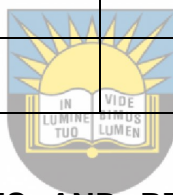
2.8 WHAT ARE THE ATTITUDES AND PERCEPTIONS OF UNDERGRADUATE STUDENTS TOWARDS THE USE OF E-RESOURCES

	Attitudes & perceptions of undergraduate students	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a.	E-Resources are readily available for use					
b.	E-Resources are easy to use					

c.	E-Resources require technical know-how to understand					
d.	E-Resources are readily accessible for use					
e.	ICT infrastructure is an expensive venture					
f.	I have phobia for the use of e-resources					
g.	I feel dizzy when using e-resources					
h.	The use of e-resources can negatively affect eyesight					

Thanks for your co-operation.

Appendix 3

Interview guide

The following are mostly open-ended questions and should be asked of each person interviewed.

1. How does the university provide resources for the undergraduate students?

2. In what ways do undergraduate students utilize the electronic resources provided by the university?

3. What specific training, workshops or seminars relating to the use of electronic resources do the universities organize for the undergraduate students?

4. Briefly explain the university support as regards the use of electronic resources targeted for the educational development of undergraduate students?

5. What are some of the capacity development issues that the undergraduate students envisaged as a result of the provision of the electronic resources?

6. What conditionalities are attached to the provision of electronic resources of the undergraduate students?

7. How do the conditions attached to the use of electronic resources affect the undergraduate students in the utilizing these resources?

8. In what way does ICT literacy skills determine electronic resources use among undergraduate students?

9. What demographic factors affect the use of electronic resources?

10. What suggestions do you have for better e-resource provision in a university?

   Thank you.

Appendix 4

ANALYSIS OF IN-DEPTH INTERVIEWS
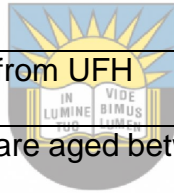
QUESTIONS	Respondents from UFH	Respondents from RU
Age	Respondents are aged between 16 and 45	Respondents are aged between 16 and 45
Gender	Four females and two males were interviewed	two females and two males were interviewed
Academic Qualification	All the six respondents are undergraduate students.	All the four respondents are undergraduate students.
How does the university provide resources for the	The provisions of e-resources are in the computer laboratories, university library, Great Hall, faculty libraries	The provisions of e-resources are in the computer laboratories, university library, and

undergraduate students?		departmental and faculty libraries.
In what ways do undergraduate students utilize the electronic resources provided by the university?	By doing their assignments given by their lecturers and tutors, chatting, entertainment purposes, internet browsing, e-mailing.	By doing their assignments given by their lecturers and tutors, chatting, entertainment purposes, internet browsing, e-mailing.
What specific training, workshops or seminars relating to the use of electronic resources do the universities organize for the undergraduate students?	GMRDC workshops and seminars, e-innovation, student lecture series, Teaching & Learning Centre (TLC) seminars	Workshops and seminars, e-learning conferences, student lecture series, seminars
Briefly explain the university support as regards the use of	Provision of Wi-Fi services, uninterrupted electricity, ICT development programmes.	Provision of Wi-Fi services, uninterrupted electricity, e-

electronic resources targeted for the educational development of undergraduate students?		resources software, ICT development programmes.
What are some of the capacity development issues that the undergraduate students envisaged as a result of the provision of the electronic resources?	The students have broader knowledge of e-resources use, improved proficiency in ICT literacy.	The students have broader knowledge of e-resources use, improved proficiency in ICT literacy.
What conditionalities are attached to the provision of electronic resources of the undergraduate students?	Regular renewal of passwords to gain access to computers and e-resources	Restricted access favors undergraduate students in order to gain access to computers e-resources and ICT laboratories

How do the conditions attached to the use of electronic resources affect the undergraduate students in the utilizing these resources?	It affects them because if the undergraduate students register at the beginning of every session, and if they are not registered, they won't be able to connect to the university Wi-Fi	Registration at the beginning of the session is mandatory, and failure to do this results in inaccessibility to the university's e-resources and ICT laboratories.
In what way does ICT literacy skills determine electronic resources use among undergraduate students?	It gives the students the knowledge and ability on how to operate and use e-resources to solve their academic problems at any period in time.	Increased proficiency in ICT literacy builds capacity of the students to use software packages and specialized e-resources.
What demographic factors affect the use of electronic resources?	Age, gender, marital status, level of education, etc.	Age, gender, marital status, level of education, etc.

What suggestions do you have for better e-resource provision in a university?	Provision of more connectivity to school Wi-Fi, in order to make it more accessible to students, in addition to e-resources so as to enhance academic performance	Provision of more connectivity to school Wi-Fi, in order to make it more accessible to students, in addition to e-resources so as to enhance academic performance

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Appendix 5

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RHODES UNIVERSITY
Where leaders learn

Drosty Rd, Grahamstown, 6139

10/08/2017

Dear Oluwayemi I. Olatoye

RE: PhD RESEARCH TITLED ICT LITERACY SKILLS AND DEMOGRAPHIC FACTORS AS DETERMINANTS OF ELECTRONIC RESOURCES USE AMONG UNDERGRADUATE STUDENTS

With reference to your recent request, permission was sought to carry out your PhD research on the above-named topic in our institution. Having fulfilled all requirements, you are hereby granted approval to carry out your PhD research within our institution.

We wish Oluwayemi Olatoye well in her research.

………………………………………………..

For: **Dr Stephen Fourie**

    The Registrar

University of Fort Hare

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Appendix 6

Editor's Report

Classic Editors

6, Adedayo Akinwonmi Street, New Bodija, Ibadan, Nigeria

EDITOR'S REPORT ON PhD THESIS

TO WHOM IT MAY CONCERN

This document certifies that the PhD thesis whose title appears below has been edited for proper English language, punctuation, spelling, grammar, and overall style (with the exception of the reference list) by Adetola Soladoye, whose qualifications are listed in the footer of this certificate.

Title:

On ICT Literacy Skills and Demographic Factors as Determinants of Electronic Resources Use Among the Undergraduate Students in the Selected Universities the Eastern Cape, South Africa

Author:

Oluwayemi IbukunOluwa OLATOYE

Date Edited:

05 February, 2019

Signed:

Dr. Adetola Soladoye

B. A (HONS) English; PGDE; Library & Inf. Sc.; (MLIS) Library & Inf. Sc; PhD

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