

**FACTORS INFLUENCING THE USE OF ELECTRONIC  
INFORMATION RESOURCES BY POSTGRADUATE STUDENTS: A  
CASE OF EGERTON UNIVERSITY**

**BY**


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## Declaration

This Research Project is my original work and has not been presented for a degree or any other award in any other University. No part of this work may be reproduced or transmitted in any other form without prior permission of The University of Nairobi.

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## **Dedication**

This project is dedicated to my husband Wilson Odiyo for all the love and support during my training period.

And to my son Timothy Jakes Odiyo, I see you achieving the best in all things virtuous, may you excel in your academics through Christ.

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## **List of Abbreviations**

- ICT** - Information Communication Technology
- TEAL** – The Essential Agricultural Library
- CD-ROM** – Compact Disk Read Only Memory
- CTA** - Technical Centre for Agricultural and Rural Cooperation
- FAO** – Food Agricultural Organization
- INASP** – International Network for the Availability of Research Publications
- PERii** - Programme for the Enhancement of Research Initiative
- LC** – Library Of Congress
- DOAJ**- Directory of Open Access Journals
- OPAC**- Online Public Catalogue
- ERM** – Electronic Resource Management
- LAN** – Local Area Network
- DVD**- Digital Versatile Disk
- IR** – Institution Repository
- ALA** - American Library Association
- VR** - Virtual Reality
- IM** – Instant message
- CSU** – Colorado State University
- BI** – Bibliographic Instruction
- LI** – Library Instruction
- WINSPIRS** – Windows Silver Platter Information Retrieval System

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## ABSTRACT

This sought to establish the factors that influence the use of electronic information resources by graduate students of Egerton University. Its purpose was to specifically present and discuss the problems the postgraduate students face in accessing electronic information resources. Descriptive research methodology was used and the data collected using questionnaires and interviews will be carefully handled and analysed. Since the research had both qualitative and quantitative data, document analysis, content analysis and descriptive statistics was used accordingly to analyse data. The study found out that age, level of Information Technology literacy and attitude of postgraduate students had an influence on use of e- resources. The study therefore recommended that ICT use in the library should be reshaped to fit better with the lives of postgraduate students and that training on ICT use by postgraduate students is vital. Further the study recommended that a collection development policy should be developed by the university and that efforts such as marketing of e-resources to postgraduate students should be emphasized. This study is intended to help the university administration and library planners to rethink on how to improve on provision of information services through electronic resources, for better access and utilization by post graduate students. The researcher hopes that new thinking will be provoked to revamp the situation in the university library.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the study

The Library is obviously the source of power of knowledge (Khan; 2009).An academic library is used to denote all libraries located in institutions of higher learning .It is considered as an organ around which all academic activities revolve .It supports learning ,teaching and research programmes in the institutions( Bature;2009) . In higher education and research, the use of the library is a matter of great importance to students, faculty members and researchers. The objective of any academic library should be to assist the parent institution to realize its planned goals through the role of selecting, organizing, preserving, disseminating and interpreting library resources to meet the needs of users. Academic libraries contain a variety of resources to serve various interest groups .These interest groups include the students , staff ,researchers and the general academic community .The effective use of these resources will enhance learning ,teaching and research activities thereby resulting to institutional and national developments .Libraries identify, acquire, organize, preserve and disseminate information resources. Information and knowledge are regarded as resources which are necessary for the achievement of academic excellence, nations' wellbeing and general development. The exponential growth of literature often creates problems for them in accessing appropriate literature and using it. The problem however seems to have been considerably resolved with the help of information and communication technology(ICT).The use of information technology for management and handling of information and data has grown significantly even in many least -developed countries ,despite their economic constraints(Khan;2009).

Contemporary library services in Kenya derive from the period of the late 1950s.Large libraries like the University Nairobi, then the Royal technical College, were set up around 1956 (Wise and Olden, 1990).Later the Kenya National Library Service was set up in 1966.Computer projects in certain libraries were seen in the early 1970s where isolated projects were run. In the present times these range of resources include computer and its associated peripherals aimed at increased access to timely accurate, relevant and current information from both immediate and remote databases. Research information should be accessible, authoritative, reliable, accurate, and timely. Due to the needs of medical



professionals for high-quality information, academic libraries have been early adopters of electronic resources to provide information and services.

The use of information technology in libraries has been profoundly affecting all aspects of information acquisition, storage and transfer. Its magnificent development has dramatically changed the mode of library operations and information services; we have now started to speak of a new information "knowledge base" (Schmitt, 2001). According to Thachill (2008), computer based communications have not only widened the access to information and helped establish linkages with the professional colleagues and friends elsewhere, it has extensively facilitated message transmission, transfer and exchange of files and text, uploading/downloading, database access, interactive services, provision of bulletin boards and newsletters, job submission and execution, teleconferencing, teleordering, interlibrary loans, creating user profiles, consolidation and repackaging of information for specific needs, dissemination of information and so on.

Hundreds of thousands of monographic materials, journals, learning resources or even databases are now available in electronic formats, and these materials can be accessed from the remote corner of a country, thereby increasing the use of information and literature and the efficiency of information services (Author; year). Users now tend to be more independent than before; they can access these electronic formats from their home computers and search databases according to their needs.

Students, faculty members/lecturers, information professionals, and employees are the user categories in higher educational or academic institutions. Their needs vary, their information or literature-seeking behaviour also varies, and they need to be catered for accordingly (Author; year). The requirements of each individual need to be addressed in an efficient way. Information resources also need to be accessed by them depending on their requirements – be they print based materials or web resources. Information professionals thus, need to initiate appropriate steps in determining their needs for information resources.

According to Khan (2009), the library is used by various categories of people, pending on the types of libraries. Libraries exist for their patrons who are both users and promoters, in order to serve their interests and not because of library professionals. Their major interest is that their desired information/materials are made available at a minimum effort in an appropriate format and when they need them.

Egerton University is one of the public Universities in Kenya and was granted full University status in 1987 by an Act of Parliament (Egerton University Calendar 1999-2000; 1999). Its main library is housed within the J.D Rockefeller Research Library within Njoro Campus. To fulfill its aim as an essential service provider the library has collections of about 9000 volumes of books and bound periodicals. In addition it has databases on CD-ROM such as Agricola, AGRIS, CAB-CD, Derwent Pest Bank, Medline, Serline, Tropag, Rural, just to mention a few. These types of CD-ROMs were operated with the assistance of retrieval software called WINSPIRS. With more than 500 yearly upgraded CD-ROMS, TEAL (The Essential Agricultural Library) together with supplementary information resources offered through the internet facilities have supported particularly agricultural scientists in their quest for scholarly research.

The J.D. Rockefeller library serves academic staff, postgraduate students and researchers (both internal and external). The major e-resources available include CD-ROM based; The Essential Agricultural Library currently at 2004 edition with a total of 500 CD-ROMS (Kamar, 2008). Previously the library was funded by Rockefeller Foundation, with Egerton University providing the IT Infrastructure. Currently is funded By CTA (Technical Centre for Agricultural and Rural Cooperation). The other CD-ROM based database is FAO DIGITAL CD-ROM water series with 29 CR-ROMS on water irrigation and agriculture.

The online databases at the library include Access to Global Online Research in Agriculture with full-text articles in over 450 journals. There is also a sister database called HINARI (Health Intern Network Access Research Initiative) and Online Access to Research Technical Centre for Agricultural and Rural Cooperation ACP-EU (CTA) .In Environment. Apart from these online based databases, the library has access to other online databases through the Program for the Enhancement of Enhancement of Research Initiative (PERii) fronted by the International Network for Availability of Scientific Publications (INASP.)

The faculty of Arts and Social Sciences (FASS) Library is a custodian of a multilingual collection in Japanese, Chinese, French and Spanish languages donated by various researchers and friends of the library.

In March, 2009, Egerton University started a resource centre with 23 computers. It is located within the main library's ground floor. It provides access to internet-based information resources. It also provides training on access and use of these resources. The centre also conducts online searches for users.



## **1.2 Statement of the problem**

Postgraduate students just like the undergraduates need to get information in all formats other than paper or print. However there has been low use of electronic information resources at Egerton University by this category of students. Many of the students come to the University with little or no computer training and therefore cannot utilize the library's electronic resources to the full. According Nyamboga, Ong'ondo & Ongus (2004), some students who have had no exposure to computers and its peripherals do not feel free to use the same. Most of the older postgraduate students have a poor attitude towards Information Communication Technology (Nyamboga, Ong'ondo & Ongus; 2004). This could probably explain the complaints by faculty members that, the lists of references of coursework and assignments submitted by most postgraduate students do not include e-resources despite the fact that the Egerton University Library subscribes to a number of them. Statistics at the reference and resource centers also show that fewer postgraduate students visit these areas for information. A large number of them have been observed to use print –bases material in the other library sections. Out of the 2007/2008 statistical reports only 38% of postgraduate students made effort to use the TEAL Library and Main Library Resource centre. According to minutes of departmental meetings, the reference librarian and librarians in the resource centre have voiced their concern about the low number of post graduate students who request use electronic resources. In a nutshell, the information needs of postgraduate students of Egerton University library are not catered for as they should or might be if the factors mentioned above are not checked. There is need to shift some of the energy devoted to various aspects of collection building to helping the students make better use of electronic resources. This may result in more informed and well researched academic work by the student population at the University.

## **1.3 Purpose of the study**

This research set out to determine the factors that influence the use of electronic information resources by postgraduate students at the Egerton University library.

#### **1.4 Objectives of the study**

- i) To establish the influence of age of postgraduate students on use of electronic resources at Egerton University.
- ii) To find out the extent to which Information Technology literacy of post graduate students influences their use of electronic resources in the Egerton university library.
- iii) To establish how attitude towards of postgraduate students influences their use of e-resources in the library.

#### **1.5 Research Questions**

- i) How does the age of postgraduate students of Egerton University affect their use of electronic information resource?
- ii) To what extent does level of information literacy affect the use of electronic information resources by post graduate students of Egerton University?
- iii) How does the attitude of Post graduate students of Egerton University influence their use of electronic information resources?

#### **1.6 Significance of the study**

It is expected that such a study will benefit researchers and scholars within the University as the university library's main role is to support university programs and research for national development. The major objective of the adoption of e-resources is to facilitate access to international information resources via the Internet and other electronic means should in turn facilitate the timely dissemination of both local and international research output (Okello-Obura and Magara, 2008). It should result in efficient research by enabling access to up-to-date international literature as soon as it is published; and ensure satisfaction of user needs.

It is also expected that students will benefit from the increased enlightenment on the advantages of using electronic information resources due to their faster retrieval and up-to-date nature.

The study will further add to the already existing pool of knowledge on the major role played by library resources (especially, electronic) in research and development. This study will provide baseline information to policy makers in public universities so as to structure ICT services for the benefit of their main clients, who are university students as well as other researchers who may seek information services from the university library. This will go a long way in improving the university library service delivery.

### **1.7 Delimitations of the Study**

The study focused on the factors influencing the use of electronic information resources by post graduate students at Egerton University's Main Campus Library at Njoro and Nakuru Town Campus Library. Egerton University was chosen as a case study due to the perception by staff and students alike, on the inadequacy of provision of electronic information services by the major information centre in the university, which is the library

### **1.8 Limitations of the study**

Since the research was confined to Egerton University, generalization of the findings to all other universities could be limited. The researcher however strove to make the study as inclusive as possible by sampling students across all postgraduate programmes as well as including library staff at both the Njoro and Nakuru town campuses of Egerton University. This wide coverage is meant to overcome any shortcomings with generalizability.

Secondly, data was collected from postgraduate students and library staff only leaving out other stakeholders who may be playing a role in provision of electronic information services in the university. They include cyber cafés, the University ICT department and other departmental resource centres. However, the study included questions covering the relationship between the students and staff on the one hand and these stakeholders on the other hand.

### **1.9 Assumptions of the study**

The following are the assumptions of the study;

- i. Egerton University offers electronic information services in its libraries.
- ii. Library staff at Egerton University provide access to electronic sources of information
- iii. University students seek information from all formats for their academic research.



## 1.10 Operational definition of terms

**Boolean search** – Use of Boolean operators also called logical operators such as AND ,OR, NOT in making key word text-based searches more precise.

**CD-ROM-** Compact Disk Read Only Memory. An optical disk format used to hold software programs and data such as pre-recorded text, graphics and sound.

**E-Journal** – Scholarly journals or intellectual magazines that can be accessed via electronic transmission .They provide material for academic research and study.

**Electronic Information Resources-** Any hard ware or software intended for the storage, transmission and use of information as well as the digital content files that may be stored, transmitted or used with hardware or software. These are inclusive of e-mail ,voice systems, local databases ,externally accessed databases ,CD-ROM ,Digital Versatile Disc (DVD),video,\* recorded media ,magnetic media ,digital movie ,photographic file ,other digitized information.

**Information - Savvy-** The cognitive ability to understand the meaning or importance of something.

**Information Communication Technology-** An umbrella term that includes any communication device or application ,encompassing radio, television ,cellular phones computer and network hard ware and ,software satellite systems and so on as well as the various services and applications associated with them such as video conferencing and distance learning.

**Information literacy** – Ability to define problems in terms of their information needs and to apply a systematic approach to search, locate apply and synthesize the information and evaluate the entire process in terms of effectiveness and efficiency.

**Public Universities** – Universities that are predominantly funded by public means through a national or sub national government.

**Web Log** – A shares online journal where people can post diary entries about their personal experiences and hobbies.

**Postgraduate student-** a student who has obtained a degree from a university, etc., and is pursuing studies for a more advanced qualification. These include post graduate Diploma students, Masters, Doctorate and Post Doctorate students.

**Techno- savvy** –Someone who is up-to-date with the latest in technology and has a basic idea about most of the things in that area.

**Telecentre** -A public place where people can access computers, the Internet, and other digital technologies that enable them to gather information, create, learn, and communicate with others while they develop essential digital skills. ...

### **1.11 Organization of the study.**

This project is presented in five chapters. Chapter one forms the introduction and background to the study .Here the overall context of the problem and the problem statement are given. In addition, an outline description of the purpose, significance, assumptions and scope of the study is made .The chapter winds up with a description of the research areas, the theoretical orientation and the variables to be analyzed and operational definition of terms.

Chapter two reviews the literature considered relevant to the study .The origin and use of the term electronic resources is traced from the thinking of various scholars and associated schools of thought. The theoretical bases explaining the origin and emergence of use of electronic resources in various countries is described in detail. This gives way to a review of research that has been carried out on use of electronic resources in academic libraries .The basic objective of this chapter is to point out that the experiences of various societies in using electronic information resources.

Chapter three describes the method s followed in investigating the problem and analyzing the data collected .A detailed profile of the research area is given and the process of instrumentation and statistical analyses explained.

Chapter four presents the findings of the study, which are discussed under the heading “factors influencing the use of electronic information resources in academic libraries, the case of Egerton University”. Measures of central tendency and dispersion were used in analyzing the quantitative data. Qualitative data will be analysed through document analysis and content analysis. Document analysis is the study of recorded human communications, such as books,

websites, paintings and laws (Babbie, 2009). Content analysis is about interpreting meaning in speech and text (O'Leary, 2004). It can involve linguistic quantification where words are units of analysis that are tallied.

Qualitative data refers to data collected from natural settings and helps at discovering the meaning that events have for the individuals who experience them. Strous and Cobin (1990) assert that qualitative methods of research can be used to better understand any phenomenon about which very little is known. It can also be used to gain new perspectives on things about which much is already known, to gain in-depth information that may be difficult to convey quantitatively.

The results of the analysis are summarized and discussed in chapter five, followed by conclusions and recommendations.



## CHAPTER TWO

### LITERATURE REVIEW

#### Introduction

This chapter shows a review of literature related to the role played by electronic information resources within the university as a centre of academic progress and for development. The definition of electronic resources and theories advanced on the emergence of their use. It also elaborates on the factors that act as an impediment to the use of electronic information resources from across the world as the research proceeds to zero in on Kenya.

Basically one of the essential units of the university is the library which was established along with the university. As a service unit of the university it is out to provide information services to the mother institutions. ICT has brought a new dimension to the way library and information centres provide scholarly materials and other useful e-resources that can serve the needs of clients in Kenyan higher institutions. Comparing the use of ICT Resources between developed and the developing nations, Mutula (2009) observed that ICT resources offers opportunities for developing countries like Kenya to narrow the development gap between her and developed nations. Looking into the future of computerizing of library services in Kenya, Ani (2007) reported that, "it is hopeful that majority of University libraries in Nigeria (Africa) would have effectively computerized their library services by 2020 for the provision of efficient library services".

#### 2.1 The Concept of Electronic Information Resources

The exponential growth of these resources has caused socio-cultural, political, educational, and economic change in the world. The paradigm shift from traditional to multi-disciplinary librarianship has increased the quantity of information passing through the library and other field of human endeavour, notable example as cited by Okore (2009) is that it has led to the improvement in the services of industries, administration, management, education, and other services of human endeavour. Focusing on the indispensability of information and communication technology to the students of Niger Delta University Etebu (2010) says that ICT is part and parcel of the entire system of the institutions, as a learning resource to the students and teaching aids to their lecturers.

Electronic resources play a vital role in all fields of study and the user community is becoming aware of this (Sujatha and Muthoi, 2006). Access to electronic resources is considered very important. However, how much and whether the resources are being used, needs to be examined. Higher learning being the first to initiate the use of latest technologies, study of use and impact of electronic resources at these institutions is the need of the hour, the results of which may facilitate other institutions to follow. For the purpose of the research e-resources are defined as online information resources, including bibliographic databases, electronic reference books, search engines for full text collections, digital collections of data and data sets, E-journals, E-books, sound recordings, websites, and Online Public Catalogs(OPAC)

Much has been made of the profound effect of the “tipping point”, the point at which a trend catches fire – spreading exponentially through the population. The idea suggests that, for good or bad, change can be promoted rather easily in a social system through a domino effect. The tipping point idea finds its origins in diffusion theory, which is a set of generalizations regarding the typical spread of innovations within a social system (Orr, 2003). In an effort to judge the truth and power of epidemic spreading of trends, Orr, read Rogers’s scholarly and scientific *Diffusion of Innovations* (1995), which has become the standard textbook and reference on diffusion studies.

### **2.1.1 The Internet**

Internet was first developed in the USA in 1969, is the network of networks and is the largest computer network...”(Thachill,2008).The Internet uses universal standards to connect millions of different networks with more than 350 million host computers in over 200 countries around the world (Internet Systems Consortium,2005).Thousands of journals and publications are now being made available in the Internet ,thereby facilitating access to online journal articles and publications in many cases free of charge. Access to library services has moved beyond geographical location. Technology has helped solved the problems patrons face in accessing a few copies of textbooks that are available in the library. Oyegbami (2009) observes that ICT is an instrument of social economic renaissance and if properly used it could excellently stem national and international calamity. If properly used it will assist growth and development of libraries in our higher institutions in Africa, it has conferred new



role on the library by bringing about the revolutionary journey from traditional to the digital libraries with new technology it has been possible to access a variety of information and knowledge sources in a manner that would be simple, easy and independent of time, place and subject disciplines. Supporting the above assertion, Sturges and Neill (2003) as cited by stated that ICT has led to the use of the Web to aid communication and dissemination of information suited for ever changing and complex society. Web resources according to Wis and Olden (2004) are organized in such a way that users can easily move from one resources to another without much stress as witnessed with manual method of accessing information which seem to be a difficult task. However, with Internet access, students from Obafemi Awolowo University in Nigeria for example can easily find out any information in the Library of Congress (LC) in the US within a short time(Adeniji, &Oguniyi;2002). Today we are living in virtual realities as captured by Omekwu and Echezona (2008) where library services are now in cyberspace and are not affected by time of opening and closing hours, which was corroborated by Ajigboye (2010), who found that users have control of what they want to learn and from which location they want to learn and at any time of their choice. However, with Internet access, students from Egerton University for example, can easily find out any information in the Library of Congress (LC) in the US within a short time. The evolution of ICT has also led to digital realities where information resources are now digitalized as manifested in e-book, e -journal, e-purchase, e-commerce, and newly face book that are now common in the western world.

### **2.1.2 E- Journals**

Electronic journals and electronic serials are scholarly journals or intellectual magazines that can be accessed via electronic transmission. In practice, this means that they are usually published on the Web. They are a specialized form of electronic document: they have the purpose of providing material for academic research and study, and they are formatted approximately like journal articles in traditional printed journals. Being in electronic form, articles sometimes contain metadata that can be entered into specialized databases, such as DOAJ , as well as the databases and search-engines for the academic discipline concerned. (Brenner, 1997)

### **2.1.3 Electronic Books and Texts**

Electronic book (also e-book, eBook, digital book) is a book-length publication in digital form, consisting of text, images, or both, and produced on, published through, and readable on computers or other electronic devices. Sometimes the equivalent of a conventional printed book, e-books can also be born digital. The Oxford Dictionary of English defines the e-book as "an electronic version of a printed book", but e-books can and do exist without any printed equivalent. E-books are usually read on dedicated hardware devices known as e-Readers or e-book devices. Personal computers and some cell phones can also be used to read e-books.

### **2.1.4 Sound and video recordings**

Recording and reproduction is an electrical or mechanical inscription and re-creation of sound waves, such as spoken voice, singing, instrumental music, or sound effects. The two main classes of sound recording technology are analog recording and digital recording

### **2.1.5 Websites**

A collection of related web pages containing images, videos or other digital assets. A website is hosted on at least one web server, accessible via a network such as the Internet or a private local area network through an Internet address known as a Uniform Resource Locator. All publicly accessible websites collectively constitute the World Wide Web.

### **2.1.6 OPAC**

OPAC (Online Public Access Catalog) is an online bibliography of a library collection that is available to the public. OPACs developed as stand-alone online catalogs, often from VT100 terminals to a mainframe library catalog. With the arrival of the Internet, most libraries have made their OPAC accessible from a server to users all over the world.

### **2.1.7 E-mail**

Electronic mail: (computer science) a system of world-wide electronic communication in which a computer user can compose a message at one terminal that can be regenerated at the recipient's terminal when the recipient logs in; "you cannot send packages by electronic mail"

## **2.2 Use of electronic information resources in academic Libraries of developed countries**

According to Fortini (2007), academic libraries are increasing the number of electronic journals (e-journals) in their collections. While patrons enjoy access to articles with the click of a button, librarians face the complex process of implementing and maintaining e-journal subscriptions. Academic libraries have embraced electronic journals (e-journals) because of their accessibility and convenience. Patrons can instantly retrieve numerous full-text documents from a database search and they appreciate the convenience of electronic access. Yet electronic access does not come without complications. According to Fortini (2007), "The decision to move from print to online-only journals is fraught with uncertainty". Libraries experience problems with e-journal collections that they may or may not have been able to anticipate. Problems do not end once e-journals are added to the collection.

The ability to view all information related to a particular resource without having to consult multiple files and spreadsheets is perhaps the greatest benefit of using an ERM (electronic Resource Management) system. Furthermore an electronic resource management system can help eliminate staffing redundancies and duplication efforts. Workflows can be examined more carefully and streamlined where necessary, cataloguing problems can be identified and corrected, and most importantly, unlikely partnerships and alliances may be formed between departments within and outside the library.

American University Library spent several years preparing for electronic-only journal access by studying the usage statistics of their bound periodicals collection, developing licensing guidelines for electronic resources, and exploring products such as link resolvers, which connect users to content in different e-resources.

In British libraries, the main electronic resources a library might use are those provided by the Internet and World Wide Web, databases (online and CD-ROM/DVD), digitised resources such as reference works, journal subscriptions or electronic copies of documents, and electronic books, both "born digital" (created specifically in a digital format) and otherwise (Reiter, 2009). Even if a number of people are still firmly wedded to print, the paperless, electronic format brings users into greater contact with library collections, while also providing librarians with an easier way of acquiring usage statistics. They allow a greater degree of interaction with a library's community through the use of blogs, wikis, RSS feeds, and e-mails. Even if users are coming into the library less frequently, the library can still



operate as a portal, offering guidance for web-surfing (perhaps by lists of approved links, or tips on surfing techniques) and providing access to a broad range of electronic resources, perhaps for the first time.

According to (Morahan-Martin & Schumacher; 1997) there are numerous references to "24/7" access to library collections in the literature. Furthermore, disabled people can access much library information at home, and resources such as e-books are customisable in terms of background colour and font size, can be configured to read out text, and have easy-to-turn pages. Difficult-to-reach communities, particularly the poorer classes who may not have home access to computers, might be more greatly involved by an electronic library. In the UK, a number of government-sponsored access improvement projects are underway, from the People's Network launched in 2002 to fill public libraries with computers, to UK Online, designed to teach people basic IT skills and introduce them to the internet. Electronic resources also fit within an emerging international political ethos. Research, particularly scientific, is currently undertaken on a global basis, and internet networking facilitates this, as recognised by at least one online scientific journal. In sum, particularly considering that they can also suggest solutions to some thornier storage issues and make searching and answering queries easier, the advantages of relying on electronic resources are undeniable.

### **2.3 Use of electronic information resources in academic Libraries in developing countries**

In India, Study results show that the students and faculty who participated in this survey are aware of e-sources and also the internet ( Kumar , 2010). Even though a majority of the academic community use electronic information sources for their academic-related work, most of them prefer print to electronic information sources. Many of the students and faculty learned about the electronic information sources either by trial and error or through the advice of friends.

In addition various constraints are experience in the search for information using these resources ( Sridevi, Satyanarayana & Murtphy,2009).

**Financial constraints:** The infrastructure required displaying, storing or print electronic journals are expensive. Downloading and printing each article will be a costly affair. This means a net increase in economic and ecological costs and it becomes a relatively expensive

way to acquire a single copy. Many e- journals do charge subscription fees. The pricing schemes of some suppliers are very complicated and limiting, and this might hinder libraries from utilizing e- journals.

**Social constraints:** Electronic interfaces can take a long time to master. Electronic searching, downloading and printing replace the traditional activities of physically browsing, scanning and photocopying journal articles. The intricate steps to accomplish the previously simple or habitual tasks might frustrate users.

People read up to 25 to 30 percent more slowly on a computer screen than on paper.

**Technological constraints:** Digital journals depend up on technology and equipment for storage and display. Proper Infrastructure facilities are required for the access. The academic community can be divided into “haves” and “have-nots” because of access to equipment and network. The network or connection speed can be too slow. Screen quality of graphics and photos is still primitive when compared to print.

Mutula (2005) describes Africa as ‘epitomizing the cradle of world’s poverty and for this reason the participation of Africa in the global knowledge arena’s deficient .Rosenberg (1998) called the lack of funding for libraries in African Universities a ‘a permanent headache’. She further observed that, even after attempts to revitalize the higher education sector in Africa, University library collection development, and especially journal subscriptions, had been neglected .However according to Darkwa and Mazibuko (2003) global interest in the application of information and communication technologies (ICT) is strongly reflected in Africa, where tertiary education institutions are increasingly attracting attention with a growing trend towards distance education and the creation of virtual communities .Several authors concur with popular thinking that identifies the following challenges facing ICT in Africa : inadequate or lacking essential human resources, rigid education structures and innovative learning methods as well as lack of space , time and money.

According to Ocholla (2003) the dynamics of an effective service culture are still challenging to the service providers with an outdated public sector service culture that is not sensitive to its customers. It might be assumed that a continent bemoaning the lack of infrastructure and



resources, and with a high level of illiteracy, ambivalent information users and a lack of basic commodities, should begin to pay attention to the development of ICT. But in fact Africa has some of the most modern ICT facilities, that have been either donated or sold to its people, or have been assembled with the use of cheap labour. Globalisation also encourages ICT transfers that necessitate leap-frogging systematic stages of technological development – and Africa is struggling to sustain this (Ochola,2003).

African countries are generally, however, ICT poor. Due to great variations in levels of socio-political and economic discourse and development, their use of ICT, in general, and specifically for teaching, learning and research, is highly problematic. A study by Klopper (1996) on IT in Information Science teaching in South African universities identified the South African new technology curricula as: network technologies (telecommunications, Internet hardware and software, Internet facilities, Internet discovery tools, electronic publishing, LANs, intelligent gateways); communication technologies (human-computer interface, speech technologies, virtual reality, graphic user interfaces, natural language processing); and retrieval technologies (artificial intelligence, electronic current awareness systems, hypertext, electronic document delivery, online database searching, automatic indexing, text digitisation and multimedia/hypermedia). The study concludes that while the importance of IT education is recognised by all university libraries, IT is underemphasized in the majority of existing curricula despite the prevailing positive attitude towards the incorporation of more IT into the curricula. In addition, constraining factors like lack of resources, space in the curricula to allocate to IT education, and maintaining a healthy balance between theory and practice, also cause major problem.

The digital Library Programme of the Higher Education Commission (HEC)of Pakistan is part of its strategy to address the information needs of researchers and students in institutions throughout the country by enabling the electronic delivery of high quality international academic journals (Furqan,2008).For a long period people in Pakistan were not aware of ICT and the *participation of Pakistani institutions in the global knowledge was very poor* – it was extremely important to address the knowledge gap or ‘digital divide’ between Pakistan and developed countries.

Access to library services has moved beyond geographical location. Technology has helped solved the problems patrons face in accessing a few copies of textbooks that are available in

the library. Oyegbami (2009) observes that ICT is an instrument of social economic renaissance and if properly used it could excellently stem national and international calamity. If properly used it will assist growth and development of libraries in our higher institutions in Africa, it has conferred new role on the library by bringing about the revolutionary journey from traditional to the digital libraries with new technology it has been possible to access a variety of information and knowledge sources in a manner that would be simple, easy and independent of time, place and subject disciplines. Supporting the above assertion, Omekwu (2003) as cited by Okore and Ekere (2008) stated that ICT has led to the use of the Web to aid communication and dissemination of information suited for ever changing and complex society. Web resources according to Ogunsola (2004) are organized in such a way that users can easily move from one resources to another without much stress as witnessed with manual method of accessing information which seem to be a difficult task.

Highlighting the benefits of digital library to users in higher institutions in Nigeria Irechukwu (2007) noted that It has enhanced scholarship communication, rise in computational science, shared cataloguing and computer networking for collaborative relationship within the library community, on-line public access, abstracting and indexing schemes. Gone are the days when libraries were described as information centre where books are preserved for reading and reference purposes only however, the picture of today Libraries are laying more emphasis on information provision that is available on the World Wide Web. (WWW). The use of ICTs in an academic library in Nigeria has added another role to the work of librarians, by providing access to a few copies of textbooks available in the library to its teaming users and complement this through ICTs more than enough resources for users to meet their information needs (Omagbemi, Akintola and Olayiwola, 2004). The role of ICT in university education is widely discussed by experts in the field of education, they all agreed that when properly use, it will improve teaching and learning among students and workers in the Nigerian educational institutions, (Olulobe, 2007). However, with the Olabisi Onabanjo University ICT facilities has been a reservoir of information, stored and retrieved when needed by members of the academic community.

In Tanzania academic and research institutions ,the use of CD-ROM facilities form the early 1990s was heralded as the first innovative programme towards the adoption of electronic library resources (Rosenberg,2009).By the late 1990s popular use of Internet and Internet resources began to take root The initiative of the International Network for the Availability of Scientific Publications (INASP) .Through its programme for the Enhancement of Research



Information (PERI) in 2001 was the first significant attempt to introduce the use of full-text electronic journals to the research institutions in Tanzania .The government and academic research institutions in Tanzania .The government and academic and research institutions in Tanzania have recognized the importance of ICTs n teaching ,learning and research ,and a factor in national development .The national ICT policy and various ICT- related programmes in a number of academic and research institution point to the perceived key role that ICTs play in various organizations.

Makerere university Library (Maklib) started accessing electronic information on CDs in the late 1980s which served the entire university (Musoke & Kingyere ,2008) .In addition to its Medline, AIDsline and Popline CD-ROMS ,The Albert Cook Medical Library also accessed electronic information when it joined the healthnet family .Using a combination of computers, low earth- orbit ,satellites, simple ground stations ,telephone lines and radio links,the project provided access to current medical literature. Soon that technology was overtaken by new developments, and an electronic-mail dial- up system (such as internet), was preferred. However, the high cost of bandwidth has greatly affected access to the internet and the use of e-resources in Uganda (Musoke,2006).

Notwithstanding the Internet –access challenge ,there has been a gradual bit steady challenge, there has been a gradual but steady change form the use of predominantly print to the use of both print and electronic resources in Maklib in the past decade (Musoke & Kingyere ,2008).

Ethiopia is one of the countries participating in Peri and has had access to various electronic journals and scholarly databases since 2003 (Mergesa & Mamo,2008). A series of training workshops were provided to librarians, information workers and researchers after they had subscribed to these resources .In October ,2004 there was a meeting at which research n an evaluation of PERI Resources and services in Ethiopia was presented .However it was evident that it was not exhaustive in terms of target groups and methodology and in the way usage statistics had been analysed .No national survey has been conducted to measure the use of electronic resources or to assess factors that might influence their use .Very little is known about how the resources are used ,who uses them, what barriers might hinder their use, and what the overall impact of the service is.

Over the last two decades African University libraries have moved swiftly from precarious situation ,which threatened their very existence ,to a more robust environment marked by impressive developments stimulated by the application of ICTs in the provision of

information services (Kiondo,2009)Until then ,the sky-rocketing cost of printed journals and other materials as well as budget cuts ,severely limited researchers and scholars, access to scholarly information .The University library, as a heart of the university was under severe threat.

ICT investment offered opportunities for libraries to revitalize themselves and regain their status as reliable information and Knowledge centres (Okon,2007).

#### **2.4 Use of electronic information resources in academic Libraries in Kenya**

The revolution of information Communication and Technology has brought a great change in the way libraries are providing services (Njoroge...et al,2011).Libraries have continued to embrace this technologies vis-a-vis Internet thus seeing the introduction of electronic resources to the library collections and services .The availability of good internet connectivity is essential in the provision of electronic resources. Kenya has had internet since 1996(Mutula, 2001)and over the years there has been great effort to improve connectivity such as the recent introduction of fibre optic cable in 2009. The need for good internet connectivity has also been supported by initiatives such as Kenya Education Network (KENET) whose aim is to enhance internet access for Kenya Universities (Odero-Musakali & Mutula, 2007).

According to a research dubbed monitoring and evaluation of electronic resources in academic and research institutions in Kenya .With the advent of internet and subsequently an emergence of electronic resources, libraries have encountered a myriad of challenges ranging from collection management, cost of the resources, marketing of these resources, training users on how to use these resources among others. These are some of the challenges that saw libraries in Kenya come together in 2002 to discuss concerted efforts to overcome these challenges.

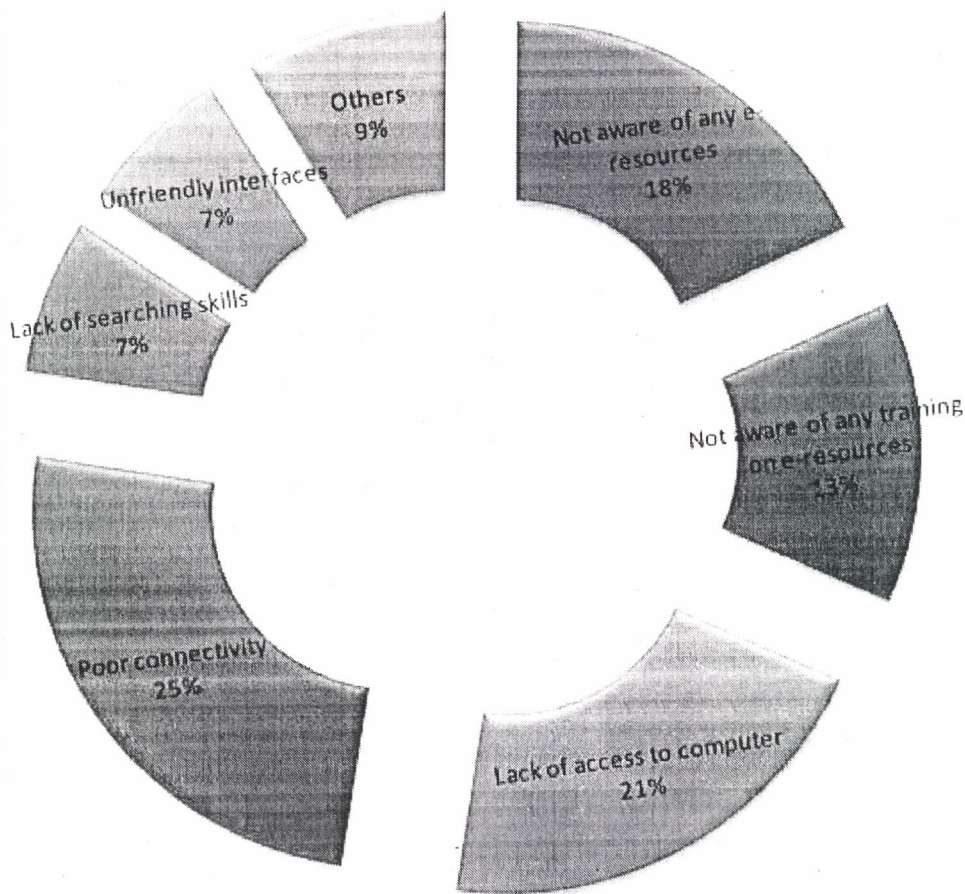
The research mentioned above showed that that access to computers was a major hindrance to access to e-resources; it is no wonder that print books were popular. Electronic resources require ICT infrastructure which includes steady and reliable internet connectivity and computer terminals; which in this case were not put in place.

The survey revealed that even though some usage is recorded, most respondents were not aware of the full range of electronic resources offered in the institutions. It identified a number of barriers to usage of electronic resources; some common reasons which include:



- Inadequate computer in the library
- Poor internet connectivity
- Delays in downloading information
- Poor lighting (ergonomics)
- Lack of support facilities, e.g. printers, limited access rights to some articles
- Lack of skills / training
- Portal not readily accessible. By the way, how do you get to the portal??
- Bulletins and brochures are only available if one physically frequents the library
  - lots of information
- Doesn't get through

These were highlighted and were captured in the following pie chart.



Source: Monitoring and evaluation of electronic resources in academic and research institutions in Kenya (2011).

## 2.5 Relevance of age on the use of electronic resources

Researchers at Heriot-Watt and Strathclyde universities claim that physiological degeneration in the connections between cells in the frontal lobe means that older people are allegedly flummoxed by new-fangled things such as taps that you pull rather than twist (Stuart, 2007).

Researcher Dr Lauren Potter says: "Older people will have problems when forced to adapt to a new way of doing things. For example, they will find it harder to adapt to digital TV, drive a new car with unfamiliar controls and use other modern household tools and utensils."

According to a study by Sarasvady and Khatri (2003) on the use of electronic resources for implementing library consortium, younger users prefer to use electronic journals. The reasons for preference of the format were found to be interesting. Young users who preferred the electronic format specified that it is easy to navigate large number of resources in the web. However 82% of the print-preferred users are in the age of forty plus. Respondents who stated that they use exclusively or mainly printed journals were asked to give reasons for this preference.

A survey conducted by Anastaci and Cochanne(2005) revealed that mature age postgraduate students studying by distance at a regional university described the reasons for barriers against participation in Web log activities as "too modern and too sophisticated". The survey indicated that only 5% of the 180, over 30 year olds in the population were Web log active. According to Waldman (2003) age is one variable that correlates with comfort with computers and use of electronic resources. Younger generations have been brought up with computers; many do not even remember a time when computers were not around. Older and returning students may not have had as much exposure to computers, resulting in increased computer anxiety. For example, Laguna and Babcock found that "...there were significant age differences on the computer task, as measured by older adults making fewer correct decisions and taking longer to make their decisions than younger adults. Studies have also found that the more computer experience people have, the less anxious they are about using computers.

The age of a postgraduate student for example might have some bearing on an individual's opinion about the efficacy of the Internet and subsequent decision n whether to use in their



academic work. Fancovicova (2008) notes that older individuals are subject to common myths, for example "being unwilling to learn new things". Consequently a study by Rosenthal and Spigelman (1996) concluded that older people in academic libraries were less likely to use the Internet. Positive perception's of one's computer skills might relate to the familiarity of younger students have with ICT since, unlike the past, it is now in use in some primary, secondary at the University. As Swan (2003) observes ICT is so recent that most people over the age 40 have not had the benefit of computer training in their own schooling.

According to a study conducted in Britain, Italy, Germany and Norway, (Kivunike...et al, 2009) age distinguishes ICT behaviour especially in respect of new ICTs. Older people lag behind other intake-up. The cause of this lag, however is probably only particularly the nature of being old, which inevitably reduces incentives to take the new.

## **2.6 Information Communication Technology Literacy**

Access is only as good as the resources that can be afforded (e.g., the number of computers and existence of network systems), the ability to work with the tools, and the network infrastructure that supports rapid and convenient connections (Thachill, 2008). The ability to use e-resources efficiently depends on basic computer skills, knowledge of what is available and how to use it, and ability to define a research problem. MacWhinnie (2003) and Thachill (2008), argue that students sometimes lack technical and research skills and so do not find the best and appropriate information, tempting them to use whatever information they can find first, fast and full text. More importantly, even with a good easy to use integrated system, students very often need the expertise of a librarian to apply search techniques and find the information they need (Thachill, 2008).

As concerns Information technology literacy, a research conducted by Aspagia (2011) sought information on the ways students identify the sources they use, the level of training they have received in using the services and their training needs. Results showed that the vast majority of the participants used Internet search engines rather than specialized databases and full-text resources. It is quite interesting, that nearly half of the respondents (49.1%) had never used ERIC, the fundamental resource of education literature. Only 6.8% became familiar with electronic resources by attending the library training programs. The main problem associated with the non-use of resources was lack of adequate searching skills. The above findings

suggest limited use of electronic resources by graduate students, mainly due to absence of basic skills.

According to Ogbonya, Singh and Ohakwe(2011), international post graduate at the University of Malaya lack the skills to effectively use library services due to their variant education background and previous library experiences in their countries .This is because some countries vital library routines are still performed manually. Previous library experience is significantly related to students' perceived importance of library knowledge with respect to the requirement to use the library. The level of computing and internet skill with which students enter higher education might influence whether or not they use electronic information resources provided by the library .It is believed that computer attitudes not only play an important role in determining the extent to which students use their computer as a learning tool but also future behaviour towards the computer such as using it for further study.

Though computers now permeate the entire world and so many students are computer literate not all students are familiar with computer and the internet technology; they have less experience in accessing, retrieving and evaluating electronic library resources. In an assessment of the use of electronic information resources at Makerere University library (Agaba, 2005). Some post graduate students did not even know what electronic information resources were, and therefore could not use them. This was 17.9 % of 152 respondents .When respondents were asked about their awareness of the electronic information resources of the university library 89.2% of stated that they were aware of the availability of these resources while 10.8% were not. Despite the academic staff and postgraduate students' awareness of these resources only 55.7% were aware and had ever used them, leading to major utilization and non-utilization of electronic information resources.

The issue of student ICT uptake is of crucial importance , for it has been argued that use of ICT during learning practice will lead to confident and competent use in their learning, while lack of it will mean that students will make little use of ICT(Siggins,1999).Universities and other tertiary education institutions have indicated that ICTs have generally positive effect on the quality of academic work .Although many student satisfaction surveys have been conducted on the use of ICTs it is still unclear whether or not students fully perceive their potential and use them effectively (Noss and Pachler ,1999). Many students join the



university without any computer skills hence much time is taken trying to make them computer literate.

Discussing on “unintelligent patterns of information retrieval and use”, Martzoukou (2008), states the consequences as user relying on trial -and -error approaches to learning, accidental information encounters and easy to get information .Research reports that Web users are not comfortable with the use of Boolean operators ,that they prefer to form unstructured queries and that they have poor query formation skills .Search engine users seldom modify their initial search terms and formulate queries which are typically short, ambiguous and are often only an approximation to the searcher’s real information needs .

According to Lwoga, Busagala and Chilimo (2002) lack of information searching skills is the main hindrance to utilization of available facilities to retrieve information. Information users spend a long time searching for literature with limited relevant results if there is absence of information skills .Information literacy skills should be conveyed via a clear curriculum, either via separate module(s), or clearly identified and assessed elements within a core subject curriculum.

In Tanzania , the use of ICT by post graduate students at Sokoine University of Agriculture and University of Dar es salaam , is still low,( Busagala,2001).For example , despite all the ICT investment taken at University of Dar es salaam , the use of ICT is yet to be fully internalized and the use of electronic information resources , justified , against cost. The evidence of limited information searching skills is presented by 72.5% of the academicians researchers and graduate students of both University of Dar es salaam and Sokoine University of Agriculture who acknowledge that they do not know how to formulate information queries. Only 27.5% knew phrase and possibly Boolean query formulation. It is also further worthy to note that most of the ICT tools in the universities are underutilized due to low level of ICT literacy within the University communities. It was observed at one University surveyed in Tanzania that almost every administrative and academic staff has access to a computer, but most of the staff used them only for simple basic functions due to lack of computer skills .The majority of older professors were not accustomed to searching for literature in their specialty subjects or to publishing their research activities on the internet.



Overall, according to Brown, Murphy and Nanny (2003) it is questionable whether electronic resources users in general are able to effectively filter through the large quantities found to successfully recognizing misleading, flawed, or incorrect information. Evidently what is lacking from the modern information literate student is not information technology skills, but solid information skills, which are an essential part of information literacy. According to Brown, Murphy and Nanny, not only the ability or willingness to construct sophisticated strategies for locating the information using the web but also “the awareness and understanding of the way in which information is produced in the modern world and critical appraisal of the current content validity of the information. According to Brown, Murphy and Nanny, there is therefore the need to bridge the gap between “techno-savvy” and “information-savvy” and build information literacy instruction on the basis of activities that are of relevance to the lives, needs, learning styles and information requirements of electronic information users.

At the University of Zimbabwe, librarians noticed that male students were outnumbering the female students in the library computer lab by far. The library computers are accessible to all students from all faculties. The statistics they had gathered on the basis of the logbooks and the student enrolment ratios confirmed their observations (Buskens and Webb, 2009). The researchers were aware of the fact that such a concept would be the dominant and maybe the only concept their respondents would have to give meaning to their experience of no access. They were sensitive to the fact that women often do not have the right concepts at their disposal to say what they really feel. They understood that this phenomenon does not reveal any individual intellectual or emotional shortcomings on the part of women, but speaks to the reality of having been born and grown up as women in androcratic societies. The researchers were aware of the fact that such a concept would be the dominant and maybe the only concept their respondents would have to give meaning to their experience of no access.

In India, a series of social and cultural norms constrain women's access to ICT, especially in common use facilities, such as cyber-cafes, tele-centres and phone shops (Kuthlau, 1991). In many culturally conservative societies, women are often not allowed to go out without supervision to public venues where men are present or seek help from male users or staff. These results in low enrolment of women in the science and technology impedes their ability to use electronic information resources (Suriya, 2009). According to Miller and Moss several studies have found that there is a gap when considering use of the internet, and that gender is a major predictor of internet use and attitudes: males seem to enjoy browsing on the internet

for enjoyment while females tend to only use it for work-related purposes .In a study of highly successful students Miller .et al found that females tended to experience more difficulty finding information online ,therefore they felt less competent and comfortable using the internet. They therefore use the internet less frequently than the males.

## **2.7 Influence of attitude on use of e-resources**

Technology is great key that social, cultural, political values have been changed. By the improvements at technology, internet becomes a guide to analyse these changes and inform people about changes. By requiring the changes, adaptation for these are needed factor to survive with the effect of globalization and competition

According to Maraffi (2007) older students' self-esteem, confidence in their abilities, expectations for life, interest in challenging courses and rewarding careers, and pursuits in math and science decline as they get older. For example, some students questioned the overall functionality of more complex searches, expressing a feeling of distrust and uncertainty about their actual effectiveness.

Ramzan (2004) has described the situation in Pakistan and other developing countries .He has observed that librarians in Pakistan were not prepared to embrace the changes forced on them by new technologies; and that most of them were uncertain about ICT applications in their libraries and benefits for their organizations, because they had little minds of the librarians, not the value of these technologies themselves. According to Fine (1986), Spacey (2003) and Evald (1996), positive attitudes are fundamental in implementing new technologies.

There is widespread fear and negative attitude that have slowed the progress of ICT implementation (Adekule, Omoba and Tella, 2007).Finlay and Finlay (1996)sought to establish a a connection between current knowledge and personality types in measuring librarians' attitude toward the internet. The researchers hypothesized that those with more knowledge and more innovative personalities were likely to have more positive attitude towards innovation .The hypothesis towards knowledge was supported, but the hypothesis regarding innovativeness was not supported.

At the University of Botswana "computer phobia" which was described as "lack of exposure to computers before coming to the University", is inhibition to the students' use of computers. According to, post graduate students entering the higher learning institutions have a more negative view towards a more learner -centered environment with the use of ICT for



higher academic learning that students who have already experienced some years of academic learning at the institutions (Yang Yang, 2008).

Worth noting is that during the interview, some postgraduate students' opinion towards the use of electronic resources, particularly the internet, has been positive, with students enjoying using these sources and finding relatively few problems while using them. However, the issue of users' opinions of "satisfactory" results must be approached with care, as satisfactory may have a different connotation in the mind of the student from the mind of an information professional. For instance, a number of students who were taken as end users at the university library expressed that they were satisfied with the outcome of their searching. However, the librarians were concerned students were interested in high recall rather than high precision. Similarly, Culbertson found in a study of students using science and engineering CD-ROM databases that although end-users could obtain and print results, few used refining techniques (Culbertson, 1992). One must be aware that the views of the students may not reflect the views of information professional. This is an issue which poses some concern for information professionals for as long as the student perceives themselves to be happy with their search results, the need to refine search terms, or use alternative sources may not emerge.

## **2.8 Program of study and the use of e-resources**

A recent examination of five academic or research libraries in Alabama showed that only one had a written policy, with pleas of poverty, lack of time and overwork offered as excuses for not fulfilling this supposedly necessary aspect of the librarian's job (Dilevko & Grewal;1997).

The question of bias in collection development procedures of libraries has in the past five years become a matter of some interest in library literature ( Dilevko & Grewal;1997).For instance Harmayer (1998)examined the holdings of pro-choice and pro-life books in California public and academic libraries, using a sample of eight books, four on either side of the contentious abortion debate. He found out that the surveyed libraries were three times more likely to collect pr-choice and pro-life books. He concluded that "academic and public librarians appear to be involved in selection development process that consciously or subconsciously discriminate against certain subject areas.

Hupp (1993) surveyed the holdings of Ohio public, academic and special libraries issuing preformed lists of titles supplied by conservative and liberal organizations. The conservative



titles appeared more frequently than the 32 liberal titles -- a result he suggests casts doubt on claims that American libraries ignore publications supporting conservative views.

According to Marcia , Wittenborg and Carpenter (1995) Even though endorsements of written collection development policies abound in the professional literature, many academic libraries do not have them in place .Interviews with several Louisiana libraries reveal possible reasons for that disparity .Instead of spending time devising policies that quickly become flexible and outdated ,bibliographers should concentrate on collection materials' selection.

## **2.9 Gender and the use of e-resources**

The gender dynamics relating attitudes about the Internet and actual utilization of the medium have not been adequately studied to date (Busselle, Reagan, Pinkleton, and Jackson, 1999.). Nevertheless, research regarding computer use more generally has highlighted the significance of interest and stereotyping about computers, as well as self-perception of ability (self efficacy) in explaining gendered patterns of behaviour vis-a-vis this technology (Campbell, 1990).

Investigations with elementary and high school students as well as adults reveal a significant gulf between male and female interest in computers (Campbell, 1990) . For example, drawing on representative national samples of elementary, lower, and upper secondary school students from 20 countries in 1989 and 10 countries in 1992, Reinen and Plomp, (1997) find that females enjoy using the computer less than do male students. In addition, research has found that men and boys have significantly more positive attitudes toward computers and more stereotyped attitudes regarding who is capable of using them (Levin and Gordon, 1989; Whitley, 1997), while female students' attitudes and attributions toward computers discourage them from using the technology (Campbell, 1990). The inference drawn is that gendered attitudes are central to discrepancies in use.

Recent literature on technology presents a complicated picture of the relationship between gender and Web use. While most scholars agree that the gender gap in Internet use has narrowed significantly in the college age group (Goodson, McCormick, & Evans, 2001) as well as the general population (Brenner, 1997; Jackson, Ervin, Gardner, & Schmitt, 2001;

Newburger, 1999; Ono & Zovodny, 2003), some gender differences have been found in attitudes toward technology, intensity of Internet use, online applications preferred, and experience in cyberspace. Coined by William Gibson in his 1984 novel "Neuromancer," it is a futuristic computer network that people use by plugging their minds into it! The term now refers to the Internet or to the online or digital world in general. Investigations of college student Web use have proven especially insightful, as research on this group allows for an examination of gender differences within an institution in which men and women generally have equal access to the Internet (Odell et al., 2000). The scholarship on gender and Web use is contradictory at times, demonstrating the dynamic nature of the interaction, as well as the need for continued investigation. In a study of college students' attitudes toward technology, Smith and Necessary (1996) found that males had significantly more positive attitudes toward computers than females did. Jackson et al. (2001) also found that females in general reported less favourable computer attitudes. Other literature, however, contradicts these findings. Several investigations have reported that gender had no significant effect on any of the dimensions of computer attitude studied (Jennings & Onwuegbuzie, 2001; Shaw & Gant, 2002). Zhang, (2002) observed that female college students possess more positive attitudes than their male peers.

The most pronounced gender difference in Web use is found in the online applications used by males and female. Male college students are more likely than their female counterparts to use the Internet for recreational purposes (e.g., playing games online, visiting adult-only sites, gambling, accessing news groups and discussion forums, staying abreast of news developments, and seeking information for personal use), while females are more likely to use the Internet to talk to family and friends (Goodson, McCormick, & Evans; 2001). These findings appear to reinforce the widespread assumption that men prefer to use the Web for information gathering and entertainment and women prefer to use the Internet for communication (Shaw & Gant; 2002).

## **2.10 Egerton University's efforts to enhance the use of e-resources**

User Education is always conducted at the beginning of each academic year. The library introduces new students to the J.D. Rockefeller Research Library complex facilities. This is done through orientation on information seeking skills on a broad range of library resources in order for them to develop their own library skills. The library orientation and training



emphasizes on finding information electronically from available e-databases and CD-ROMS (Kamar, 2008).

Brochures of E-resources (Online and CD-ROMS) are used to market and decentralize the TEEAL product/service, the library puts up a notice whenever there is a TEEAL updated. The library consequently then installs and updates the index also known as an abstracts on departmental and personal computers for both staff and postgraduate students at no monetary cost to the user (Kamar,2008).

In its efforts to market the use of e-resources, Public Relations is highly emphasised among staff to encourage the use of e-resources (Nyamboga , Ongondo, and Ongus ,2004) .Public relations are the processes of creating and maintaining a good positive image with clients so as to effectively create awareness of the available library e-resources and other services/products It is the library's way of communicating with the actual and potential users on the library's products and services with the aim of influencing attitudes on e-information resources (Kamar,2008).

The University library also uses guides to create awareness and use of electronic resources. A wide range of guides is available at the J.D Rockefeller Research Library for both print and E-resources. They include guides to library services, guides to online journals and databases guides for teaching database search skills, and catalogue guides. The library guides are in print format and are updated at the start of an academic year, and distributed to new students during fresh man orientation programmes (Egerton University Library Monthly Report, 2009).

Staff at the library also provides guides to online access to a number of databases in different disciplines. This is done for individuals or class groups. These are guides to databases bibliographic details and abstracts as well as linkage to full text (Egerton University Library Monthly Report, 2009)

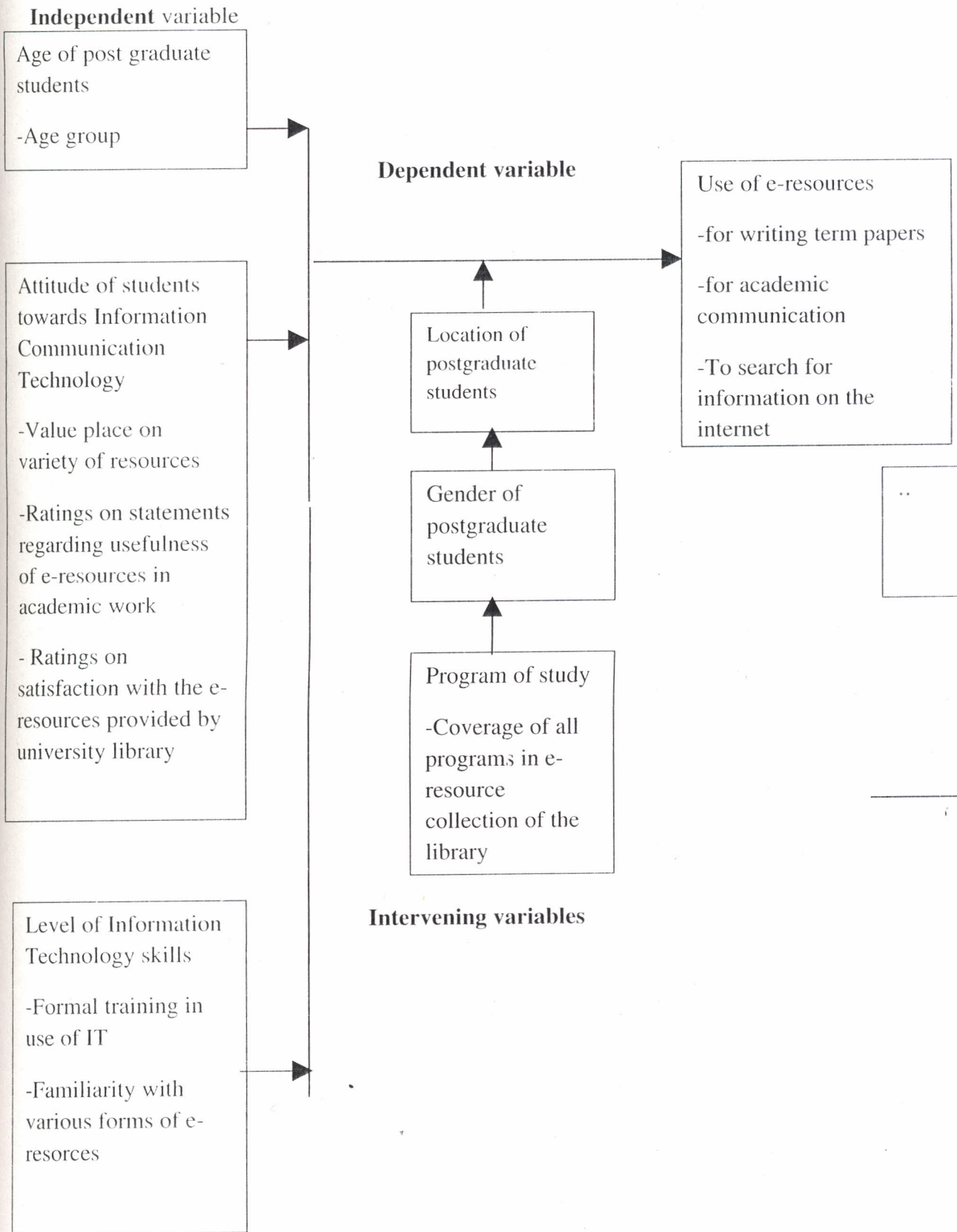
Egerton University Library also conducts Seminars and Workshops that are designed to discuss issues and to provide opportunities for practical hands-on experience so that clients can develop skills and techniques to navigate e-information databases (Kamar, 2008).

## **2.10 Conceptual framework**

The study adopted a conceptual framework, depicting the relationship between the independent and dependent variables as shown in figure 2.1 below.



**Figure 2.1 Conceptual Framework**



## **CHAPTER THREE**

### **RESEARCH DESIGN AND METHODOLOGY**

#### **3.1 Introduction**

This chapter describes the methodology used in the study. It comprises a detailed account of the following; research design, target population, sample and sampling procedures, data gathering instruments, data collection procedures, method used in data presentation and analysis.

#### **3.2 Research design**

In this study, descriptive design was used in order to bring out the characteristics of the variables mentioned in the conceptual framework. Descriptive design studies are conducted in communities to establish the extent of a range of issues such as education or health. They provide the foundation upon which correlational and experimental studies emerge (Mugenda, 2008). The main goal of using this design is to describe relevant aspects of the phenomena of interest, in this case individuals and their practices in using electronic information resources. This type of design helped in understanding characteristics of the group of study, in terms of their age, IT literacy levels, education level and job status.

The researcher used descriptive design to determine characteristics of the target population, examine association between variables and assess expected behaviour.

#### **3.3 Target population**

The primary population of this study was the total number of individuals termed as postgraduate students of Egerton University (Postgraduate Diploma, Master of Arts/ Master of Science and Doctoral students) as well as Librarians in charge of each of the three libraries. Respondents were consequently be randomly chosen to participate in this study. In each faculty as many students from as many programmes as possible were to be covered in order to provide the greatest possible diversity of respondents for the study. As at March, 2011, the post graduate students population was 1425 (Egerton University Graduate school

nominal roll) stratified as in table 3.1 below while the population of Librarians in charge of the three libraries as at the same date was 10.

**Table 3.1 Target Population**

<b>Category</b>	<b>Target Population</b>
Librarians	10
Doctoral Students	38
Postgraduate Diploma students	722
<b>Total</b>	<b>798</b>

### **3.4 Sampling Procedure**

To begin with, the most essential task was to identify respondents from within the various academic Programmes. This was executed in a way that ensures that truly representative samples are chosen in the whole university. The total population was divided into subgroups from each of which a sample was selected (Mugenda, 2008). Stratified random sampling was used to achieve the desired representation of the various subgroups in the population. This is because the population is composed of clearly recognizable non-overlapping sub-populations, which may be called strata. These are the various groups of post graduate students who are at different levels of study, namely Postgraduate Diploma, Masters and Doctoral levels. Since the population embraces a number of distinct categories and of different sizes, the frame was organized by these categories into separate strata. Subjects were then selected in such a way that existing sub-groups in the population were fairly but randomly represented within the sample. Simple random sampling was then done to ensure that each element in each strata has an equal chance of selection. Since the librarians in charge are few in number, it was possible to pick all of them as respondents.

#### **3.4.1 Sample Size**



Ahern, T& El-Hindi, A. E. (2000). Improving **the instructional congruency of a computer mediated small group discussion: A case study in design and delivery.** *Journal of Research on Computing Education*, 32(3), 385-400.

**Agyen-Gyasi,K (2008) . The Need for Subject Librarians in Ghanaian Academic Libraries. Electronic Journal of Academic and Special Librarianship v.9 no.3**

Ajidahun, C (2007). **The Training, Development and Education of Library Manpower in Information Technology in University Libraries in Nigeria.** Available at [http://www.worlib.org/vol17no1/ajidahun\\_v17n1.shtml](http://www.worlib.org/vol17no1/ajidahun_v17n1.shtml). Downloaded on 13/7/2011 at 12.02 p.m

Ajigboye ,S (2010.) **Mobile Learning: Exploring Partnership between Education and Communication Platforms.** A paper delivered at the 2nd Professional Summit on Information and Technology held at the Nnamdi Azikwe Library, University of Nigeria Nsukka 3rd -7th May, 2010.

Akin,L (2008). **Communication of community college library promotion to distance learners: Librarians' practices and perceptions as determined via e-surveys and telephone interviews.** Available at <http://www.grin.com/en/doc/265768/>. Downloaded on 3/7/2011 at 9a.m

Ani,O.E. **Information Communication and Technology (ICT) in African Librarianship: Problems and prospects.** *Gateway Library Journal*. 10, 2; 2007 Pp 119-118

Barbie, E (2009) **The basics of Social Research.** London: Thompson Nelson

Baruchson-Arbib S and Frida S (2002). **The Use of Electronic Information Sources by Israeli College Students. The Journal of Academic Librarianship. 28 (4), 255**

Bature, Irmiya. **Utilization of library resources by students of tertiary institutions in Kebbi state of Nigeria .** *International journal research in education* vol 6 number 1&2,2009.

Bonk, J., & King, S. (1998). **Electronic collaborators: Learner centered technologies for literacy, apprenticeship, and discourse.** Mahwah: Lawrence Erlbaum Associates.

To begin with, the most essential task was to identify respondents from within the various academic Programmes. This was executed in a way that ensures that truly representative samples are chosen in the whole university. The total population was divided into subgroups from each of which a sample was selected (Mugenda, 2008). Stratified random sampling was used to achieve the desired representation of the various subgroups in the population. This is because the population is composed of clearly recognizable non-overlapping sub-populations, which may be called strata. These are the various groups of post graduate students who are at different levels of study, namely Postgraduate Diploma, Masters and Doctoral levels. Since the population embraces a number of distinct categories and of different sizes, the sample frame was organized by these categories into separate strata. Subjects were then be selected in such a way that existing sub-groups in the population were fairly but randomly represented within the sample .Simple random sampling was then done to ensure that each element in each strata had an equal chance of selection. Since the librarians in charge are few in number, it was be possible to pick all of them as respondents. The Sample size is shown in table 3.2 below

**Table 3.2 Sample size**

<b>Category</b>	<b>Target Population</b>	<b>Sample</b>
Librarians	<b>10</b>	<b>10</b>
Doctoral students	<b>38</b>	<b>36</b>
Masters students	<b>722</b>	<b>248</b>
Postgraduate diploma students	<b>28</b>	<b>28</b>
<b>Total</b>	<b>798</b>	<b>322</b>

### **3.5 Instrumentation and data collection**

The research relied on primary data and some secondary data obtained from respondents (librarians and students). Specially designed data collection instruments comprising questionnaires and interviews were instrumental for capturing relevant data. Secondary data was also collected by means of document analysis of various official documents (including reports, policy documents, websites and so on). These were obtained from the libraries of the institution.

### **3.5.1 Questionnaires**

In this study, self-administered structural questionnaires that solicited information and opinions directly from post graduate students and were randomly administered to the respective respondents. Differently designed questionnaires were administered to each of the two distinct categories of respondents in order to elicit responses regarding the usage of electronic information resources within Egerton University libraries. In addition to closed ended questions, the questionnaires were also have a few open-ended questions, to which respondents were required to freely give their own independent opinions. In this category of data collection tools, the following were prepared :

- Questionnaire for Librarians: These will be used to gather data pertaining to limited personal details of the respondent (qualifications, years of experience), details about the library, library's information technology infrastructure, information technology usage in libraries and library staff related issues.
- Questionnaire for post graduate students: These will be used to gather data pertaining to: limited personal information (level of study, level of ICT literacy), usage of Egerton University library, users' information requirements, usage of electronic information resources and relevant miscellaneous issues.

### **3.5.2 Interview Schedule**

With qualitative research interviews one tries to understand something from the subjects point of view and to uncover the meaning of their experiences (Kvale, 1996). Interviews allow people to convey to others a situation from their own perspective and in their own words. Research interviews are based on the conversations of everyday life. They are conversations with structure and purpose that are defined and controlled by the researcher



(Foddy, 1993). The research interview leads to objective information and captures many of the subjects views on something.

Researchers normally control interviews to avoid bias and distortion in relation to specific research questions and specific purposes (Ongus, 2005). Interview was used especially as obtaining 100percent response rate is not always possible considering the shortcomings of questionnaires which could have had low response rate (Gillham,2008).Interviews have the overwhelming strength of face to face communication .A semi-structured interview was used albeit on a clear structure to bring out natural setting that has been carefully developed .

In this study structural interview schedule was employed to capture supplementary information from the librarians. This method was employed mainly for the purpose of gathering supplementary information with the following intentions in perspective: To exchange ideas and experiences, to elicit additional information and to confirm facts.

### **3.6 Pilot Study**

Prior to embarking on the data collection proper , all the data collection instruments prepared for this study were tried out on a small scale , in libraries of Laikipia University College .This pre-testing exercise had the objective of ensuring that unforeseen errors are eliminated and that clear language and wording are used appropriately .This helped in fine-tuning wide range of responses ,thereby improving the likelihood of obtaining a higher rate of returns for the questionnaires issued.

The institutions /departments visited were as follows:

- Laikipia University College main library located at Laikipia University, a constituent College of Egerton University (Visited on 12th<sup>May</sup> ,2011).Interview schedule and questionnaire successfully administered on trial basis.
- Nyahururu Town Campus of Laikipia University College (Visited on 19<sup>th</sup> May, 2011) Interview schedule and questionnaires were successfully administered on trial basis.
- The Gender Resource Centre at Laikipia University College (Visited on 21<sup>st</sup> May, 2011) Interview schedule was successfully administered on trial basis

### **3.7 Data Collection procedure**

The collected data was analyzed in accordance with the stipulated objectives of the study. Following the successful pilot study and subsequent modification of all data collection tools, the actual data collection exercise was conducted in independent rounds, as indicated in the following tables. It is important to note that each station usually required 2-3 follow-up visits after the initial one, in order to maximize the return of questionnaires issued to targeted respondents. The follow-up visits ensured that wastage of questionnaires was cut down to the least possible extent.

### **3.8 Data analysis method**

The data collection exercise was effectively concluded on 29<sup>th</sup> June, 2011 after having visited the stations within eight weeks time span. Data analysis was based on views expressed by a total of 202 students and 10 librarians. The respondents who completed and returned questionnaires issued to them comprised 202 of the 256 postgraduate students initially contacted with questionnaires to complete. The students were randomly chosen from various programmes offered at the university. All the 10 Librarians issued with questionnaires returned them completed (that is 100% response rate.). Interview sessions for both groups were also taken into account.

The research had 2 types of data, that is, qualitative and quantitative data. Descriptive statistics are used to describe and summarize the basic features of the data in a study, and are used to present quantitative descriptions in a manageable and intelligible form (O'Leary, 2004). Descriptive statistics was used to provide measures of central tendency and dispersion. The qualitative data analysis is used to interpret non-numerical data (verbal and non-verbal communication). Qualitative data refers to data collected from natural settings and helps at discovering the meaning that events have for the individuals who experience them. Strous and Cobin (1990) assert that qualitative methods of research can be used to better understand any phenomenon about which very little is known. It can also be used to gain new perspectives on things about which much is already known, to gain in-depth information that may be difficult to convey quantitatively. This was done through document analysis and content analysis. Document analysis is the study of recorded human communications, such as books, websites, paintings and laws (Babbie, 2009). Content analysis is about interpreting meaning in speech and text (O'Leary, 2004). It can involve linguistic quantification where words are units of analysis that are tallied.

### OPERATIONALIZATION OF VARIABLES TABLE

Objective	Variable	Indicators	Measurement	Scale	Data collection	Data analysis
To establish the extent to which IT literacy of postgraduate students affects their use of e-resources	<p><u>Independent</u> :</p> level of access	Frequency of use  Level of personal involvement in doing searches	Number of times students use e-resources in a semester  -personal searches per individual	Ordinal        Nominal	Interview        Questionnaire	Descriptive Statistics (test and correlation coefficient)        Content analysis
To assess the extent to which attitude of the students influences their use of electronic resources	<p><u>Independent</u></p> Attitude towards ICT	-Value accorded to e-resources  -View on support services in using e-resources  -relevance of resources provided to area of study	- Number of requests by students for a resource in e-format	Ordinal	Questionnaire	Descriptive Statistics (correlation coefficient)
To establish the influence of age students on use	Independent: students age	Age in years	Age group	Ordinal	Questionnaire	Descriptive Statistics



of e-resources	Dependent :u se of e- resources					( chi- square)
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## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION AND INTERPRETATION

#### 4.1 Introduction

This chapter presents the results and discussion of the factors that affect the use of electronic resources by post graduate students in relation to their academic work. Two sixty six (266) respondents responded to the questionnaires as shown in the table below.

#### 4.2 Questionnaire return rate

**Table 4.1: Questionnaire return rate**

Category	Sample size	Response rate	Percentage
Librarians in charge	10	10	100%
Doctoral students	36	30	83%
Masters students	248	202	81%
Postgraduate diploma students	28	24	86%
<b>Total</b>	<b>312</b>	<b>266</b>	<b>85%</b>

Librarians in charge (10), doctoral students (30), masters students (202) and post graduate diploma students (24) filled the questionnaires (Table 4.1). The focus was directed at postgraduate students within Egerton University's Njoro and Nakuru Town Campuses. The findings were reported in form of frequencies, percentage tables and graphs and results discussed.

### 4.3 Demographic characteristics of postgraduate students

The study undertook the mandate of finding out the ages of the respondents in order to group them into age ranges for the purpose of establishing how this factor influenced the use of e-resources.

#### 4.2.1 Age of postgraduate students

The age ranges of the postgraduate students are presented in table 4.2 below.

**Table 4.2: Age of postgraduate students**

Age group	Respondents	Percentage
25-35	69	27
31-35	65	25.4
41-45	48	18.8
Above 45	14	5.4
<b>Total</b>	<b>256</b>	<b>100</b>

The post graduate students' ages ranged from between 25 and 29 above 45 years. These respondents were distributed as, 25-29 years (27.0%), 30 – 35 years (25.4%), 36 – 40 years (23.4%), 41 – 45 years (18.8%) and above 45 years (5.5%).

#### 4.2.2. Gender of Postgraduate students

This study made use of both male and female respondents. Out of the students who responded to the questionnaire, 60.9%, who formed the majority were male while 39.1% were female as shown in table 4.3 below.

**Table 4.3: Gender of the respondents**

Gender	Respondents	Percentage
Male	156	60.9
Female	100	39.1
Total	256	100

Male respondents were more than the females because the university population of postgraduate students suffers from a significant gender imbalance with most students being male.

#### 4.3 Influence of age of postgraduate students and use of electronic resources at Egerton University library

This study was interested in the analysis of the influence of the age of postgraduate students on use of electronic resources. The adoption of a technology may be influenced by age. Some studies show that the old have a higher likelihood of not accepting a technology as compared to young people.

The age of post graduate students used in this study was noted to vary. The use of chi-square goodness of fit test was adapted to analyse the relationship between age and use of electronic resources in the University. A cross tabulation of the respondents age and the use of electronic resources is shown in table 4.4 below.

**Table 4.4: A cross tabulation of the relationship between age and use of library electronic resources**

		Age group of the respondents					Total
		25 - 29	30 - 35	36 - 40	41 - 45	above 45	
Use of library e-resources	yes	56 (87.5%)	43 (66.2%)	34 (65.4%)	27 (57.4%)	21 (75.0%)	181
	no	8 (12.5%)	22 (33.8%)	18 (34.6%)	20 (42.6%)	7 (25.0%)	
Total		64 (100.0%)	65 (100.0%)	52 (100.0%)	47 (100.0%)	28 (100.0%)	256
		)	)	)	)	)	



Calculated chi-square = 14.314, Critical chi-square =9.49, P-value = 0.006, Degrees of freedom = 4

The above results shows that age is an important factor in the use of electronic resources by postgraduate students at Egerton University (chi-square=14.314, P-value = 0.006, at 4 degrees of freedom).

The results indicate that 56 (87.5%) of respondents at the age of range of 25-29 use electronic resources. The distribution of other respondents using electronic sources by age was 30-35 at 43 (66.2%), 36-40 at 34 (65.4%), 41-45 at 27 (57.4%), and above 45 at 21 (75.0%).

However, the distribution of respondents not using electronic resources by age was as follows: 25-29 were 8 (12.5%), 30-35 were 22 (33.8%), 36-40 were 18 (34.6%), 41-45 were 20 (42.6%) and above 45 were 7 (25.0%).

It can further be noted that a cumulative of 73% of respondents in the age range of 25-40 years were using electronic resources as compared to 27% who were not using. This research noted that only 36% of the respondents aged 41 years and above were using electronic resources while an overwhelming 64% of the respondents aged 40 years and above were not using electronic resources

This implies that students use of electronic resource is more popular with younger as opposed to the older postgraduate students

#### **4.3.1 Age difference on the frequency of using electronic information resource**

This study further noted a significant difference in the frequency of using electronic information resources across age brackets as shown in table 4.5below.

**Table 4.5: A cross tabulation of frequency of using electronic information resources provided in the university library and age of respondents**

		Age group of the respondent					Total
		25 - 29	30 - 35	36 - 40	41 - 45	above 45	
Frequency of using electronic information resources provided in the university library	Never	11 (52.4%)	2 (9.5%)	0 (.0%)	8 (38.1%)	0 (.0%)	21 (100.0%)
	Rarely	6 (24.0%)	10 (40.0%)	1 (4.0%)	8 (32.0%)	0 (.0%)	25 (100.0%)
	Not often	1 (2.3%)	8 (18.6%)	26 (60.5%)	5 (11.6%)	3 (7.0%)	43 (100.0%)
	Often	24 (54.5%)	12 (27.3%)	3 (6.8%)	1 (2.3%)	4 (9.1%)	44 (100.0%)
	Very often	20 (41.7%)	14 (29.2%)	10 (20.8%)	1 (2.1%)	3 (6.3%)	48 (100.0%)
Total		62 (34.3%)	46 (25.4%)	40 (22.1%)	23 (12.7%)	10 (5.5%)	181 (100.0%)

The results above shows that 91.6 % of the respondents aged 25 - 40 years reported to be using electronic information resource very often. Other responses observed within this age bracket were often (88.6%), not often (81.4%), rarely (68.0%) and never (61.9 %).

The results further indicate that 8.4% of the post graduate students aged above 40 years were using electronic information resource very often with other responses being often (11.4%), not often (18.6%), rarely (32.0%) and never (38.1%).

This implies that younger students have a higher frequency of using electronic information resource as compared to their older counterparts.

#### 4.3.2 Age variation within the programmes of study among the postgraduate students

There was variation of age among post graduate students enrolled in different programmes. This is illustrated in the Table 4.6 below.

**Table 4.6: A cross tabulation of age group of the respondent and programme of study**

Age	Programme of study			Total
	Doctorate	Masters	Post graduate diploma	
25 – 29	0 (0.0%)	65 (32.2%)	4 (16.7%)	69 (27.0%)
30 – 35	3 (10.0%)	48 (23.8%)	14 (58.3%)	65 (25.4%)
36 – 40	12 (40.0%)	44 (21.8%)	4 (16.7%)	60 (23.4%)
41 – 45	11 (36.7%)	35 (17.3%)	2 (8.3%)	48 (18.8%)
above 45	4 (13.3%)	10 (5.0%)	0 (0.0%)	14 (5.5%)
Total	30 (100.0%)	202 (100.0%)	24 (100.0%)	256 (100.0%)

Calculated chi-square = 40.107, Critical chi-square = 15.51, P-value = 0.001, Degrees of freedom = 8

The above table shows that the age distribution of the doctorate students was 25-29 (0%) 30-35 (10.0%), 36-40 (40.0%), 41-45 (36.7%), and above 45 (13.3%). The age distribution of masters students was 25-29 (32.2%) 30-35 (23.8%), 36-40 (21.8%), 41-45 (17.3%), and above 45 (5.0%). The distribution of postgraduate students respondents age was 25-29 (16.7%) 30-35 (58.3%), 36-40 (16.7%), 41-45 (8.3%), and above 45 (0.0%).



The calculated chi-square statistic of 40.107 (significant at 5% level) reveals a pattern of relationship where majority of the doctoral students (50.0%) are aged more than 40 years with only (50.0%) who were aged between 25-40 years. A high portion of masters students (77.8%) were aged between 25-40 years as compared to only 22.2% who were aged more than 40 years. Majority of the post graduate student were younger with 91.7% aged between 25-40 years and only 8.3% being aged more than 40 years.

#### **4.4 Influences of information technology literacy on postgraduate students use of electronic resource**

This study further sought to evaluate the relationship between training (literacy) on electronic information resource on the use of the same.

Respondents were requested to indicate whether they have formal training on use of electronic information resources and results recorded in the Table 4.7 below.

**Table 4.7: Endowment of any formal training on use of electronic information**

	Frequency	Percent
Yes	155	60.5
No	101	39.5
Total	256	100.0

The above results show a sizeable portion of the students (39.5%) did not have formal training on use of electronic information resource. However, 60.5% had such training.

An in-depth analysis of the Likert scale on familiarity with the use of different electronic resources such as internet, CD-ROM, library OPAC and the university student database for differences between postgraduate students with formal training on use of e-resources and those without was done using independent samples T-test. The Likert scale on familiarity was drawn as 1= unfamiliar, 2=fairly familiar, 3 = familiar, and 4 = very familiar with respect to the response obtained from the above instruments.

The T-Test analysis results are shown in Table 4.8 below

**Table 4.8: T- Test results for the difference in familiarity with use of different electronic resources for students with formal training and those without**

Endowment of formal training	N	Mean	Std. Deviation	Std. Error
				Mean
Yes	155	2.5819	.66893	.05373
No	101	1.9743	.51820	.05156

T-value = 8.16, P-value = 0.001, 95% confidence interval for the mean difference of 0.608 = 0.461 and 0.754

The above results shows that post graduate students with formal training had significantly higher familiarity scores as compared to their counterparts with no formal training.

A further analysis on the relationship between information technology literacy and use of electronic information resources was done using chi-square/cross-tabulation. The results are shown in Table 4.9 below.

**Table 4.9: A Cross tabulation of use of electronic information and endowment of any formal training**

		Whether the respondent uses library resources		Total
		yes	no	
		Endowment with formal training on use of electronic information	Yes	
	No	46 (45.5%)	55 (54.5%)	101 (100.0%)
	Total	181 (70.7%)	75 (29.3%)	256 (100.0%)

Calculated chi-square = 50.973, Critical chi-square = 3.84, P-value = 0.001, Degrees of freedom = 1, Remark = Significant at 5% alpha.

The above results show that there is a significant relationship between training on ICT and use of e-resources. Majority (54.5%) of the post graduate students with no formal training do not use e-resource as compared to 45.5% who use. In contrast, majority (87.1%) of the students with formal training use e-resources as compared to 12.9% who do not.

This implies that information technology literacy increases the chance of use of e-resources among the postgraduate students.

A closer analysis on the frequency using electronic information resources along programmes of study reveals some differences as shown in Table 4.10 below.



**Table 4.10: A Cross tabulation of frequency of using electronic information resources provided in the university library and Programme of study**

		Programme of study			Total	
		Doctorate	masters	post graduate diploma		
Frequency of using electronic information resources	Never	0 (0.0%)	9 (6.4%)	4 (22.2%)	13 (7.2%)	
	Rarely	0 (0.0%)	12 (8.6%)	5 (27.8%)	17 (9.4%)	
	Not often		0 (0.0%)	43 (30.7%)	2 (11.1%)	45 (24.9%)
		Often	7 (30.4%)	44 (31.4%)	6 (33.3%)	57 (31.5%)
	Very often		16 (69.6%)	32 (22.9%)	1 (5.6%)	49 (27.1%)
		Total	23 (100.0%)	140 (100.0%)	18 (100.0%)	181 (100.0%)

Calculated chi-square = 44.552, Critical chi-square = 15.51, P-value = 0.001, Degrees of freedom = 8, Remark = Significant at 5% alpha.

The above data shows that the doctorate students reported to be using electronic information resources very often (69.6%) and often (30.4%). It was observed that 22.9 % of the masters students reported to use electronic resource very often. Other responses included; often (31.4%), not often (30.7 %), rarely (8.6%) and never (6.4%).

The results further indicates that 5.6% of the postgraduate diploma students accessed electronic information resource very often (5.6%), often (33.3%), not often (11.1%), rarely (9.4%) and never (22.2%).

A calculated chi-square statistic of 44.552 (significant at 5% level) further confirms that doctorate students have the highest frequency of use of electronic information resources, followed by masters and PGD students respectively. This can also be noted from the fact that from the students who reported to be using e-resources on a very often and often basis, 100% of them were doctorate students while 54% and 39% were masters and postgraduate students respectively.

#### 4.5 Post graduate students attitude and the use of electronic resources

#### 4.5.1 Satisfaction with electronic services provided by the library

When asked about their satisfaction with e-resources in the library, (where 4=Very satisfied, 3=satisfied, 2= fairly satisfied and 1= Not satisfied) the responses were as follows: 12.5% of the students indicated that they were not satisfied, 47.7% indicated that they were fairly satisfied, 34.8% were satisfied while 5.1% indicated that they were very satisfied with the e-resources as shown in Table 4.11 below.

**Table 4.11: Levels of satisfaction with electronic services**

Level of satisfaction	Respondents	Percentage
Very satisfied	9	5
Satisfied	63	34.8
Fairly satisfied	86	47.7
Not satisfied	23	12.5
Total	181	100

The above results indicate that the level of satisfaction with the electronic resources in the university is generally not satisfactory. Some of the reasons for the low popularity of the e-resources as outlined by the students who do not use electronic resources in the university are outlined in Table 4.12 below.

**Table 4.12: Reasons for not using library resources**

Reason	Respondents	Percentage
Slow internet	50	66.6
Lack of space	14	18.7
Lack of time	8	10.7
Other reasons	3	4
Total	75	100

The above results show the slow internet speed is the main reason for the low popularity of the e-resources provided by the library in Egerton University as cited by 66.7% of the respondents. Other reasons cited were lack of space in the library (18.7%), lack of time (10.7%) and other reasons (4.0%).

Respondents were requested to rate some statements that measured their attitude on the usefulness of e-resources. The statements that sought to determine the students' attitude were: Changes brought by ICT applications are out of control, ICT helps make specific information available, ICT enables resource sharing and ICT increases efficiency in doing library searches.

The scores on level of attitude about usefulness of e-resources was then analysed for differences between postgraduate students using electronic resources and those not using. This was done using independent sample t-test and the results recorded in Table 4.13 below.

**Table 4.13: T-test results for the difference in levels of attitude by students using e-resources and those who do not**

Use library resources	N	Mean	Std. Deviation	Std. Error
				Mean
Yes	181	2.6837	.52878	.03930
No	75	2.4733	.43413	.05013

T-value = 3.045, P-value = 0.003, 95% confidence interval for the mean difference of 0.2104 = 0.074 and 0.346, Remark = Difference is significant at 5% alpha.

The above results show that students not using electronic resources have a more negative attitude on ICT as compared to those who use. The mean difference in attitude of 0.2104 is significant at 5% level. The average response by students who used electronic resources was 2.6837 (translated as 'agree') as compared to those who were not using which was of 2.4733 (translated as 'fairly agree')

This implies that students using e-resources had more positive attitude on ICT as compared to those not using.

In order to analyse the possible reasons for the students ICT attitude and to determine whether low altitude by some students can be attributed to the perceived usefulness of electronic resources, students were requested to indicate how useful electronic information resource was to them.

A Likert scale of 1-4 that ranged from 1=not useful, 2= fairly useful, 3 = useful and 4 = very useful was generated. A Pearson's correlation coefficient analysis on the relationship between



attitude on ICT and perceived usefulness of electronic information resources was done and the results tabulated in Table 4.14 noted.

**Table 4.14: Correlation coefficient results for the relationship between attitude of e-resources and the perceived usefulness**

		Perceived usefulness of e-resources	Attitude of e-resources
Perceived usefulness of e-resources	Pearson Correlation	1	.105
	Sig. (2-tailed)	.	.045
	N	256	256
Attitude of e-resources	Pearson Correlation	.105	1
	Sig. (2-tailed)	.045	.
	N	256	256

The above results show a significant positive relationship between the variables (Pearson's correlation = 0.105, P-value=0.045. This implies that the more perceived usefulness of electronic information resources, the more positive the attitude towards the same.

When the library staff were asked to indicate what efforts the university administration is making to enhance the provision and use of electronic resources, the responses were as shown in table 4.15 below

**Table 4.15 University administration efforts in enhancing the provision and use of electronic resources**

	Responses	Percentage
		%
Training IT	8	57

From table 4.15, the university is mainly concentrating on training in IT(57%), followed by provision of infrastructure(29%) and finally provision of e-journals and e-books(14%)

#### 4.5.2 Suggestions to improve the use of electronic resources

Respondents who were using Egerton University library electronic information resources were requested to suggest what the institution can do to solve the problems related to the e-resource usage. Their responses are summarised in Table 4.16 below.

**Table 4.16: Suggestions on how the institution can solve the above problems**

<b>Suggestion</b>	<b>Frequency</b>	<b>Percent</b>
Purchase of more computers	49	27.1%
Training on ICT	41	22.7%
Increase bandwidth	25	13.8%
Increase time for usage	25	13.8%
Build bigger library	21	11.6%
Infrastructure improvement	20	11.0%
<b>Total</b>	<b>181</b>	<b>100.0%</b>

The results indicate that purchase of more computers (27.1%), training on ICT (22.7%), increase of bandwidth in order to boost the internet speed (13.8%), building of bigger library (11.6%) and general infrastructural improvement (11.0%) are the main suggestions of how the institution can improve its provision of electronic information resource in the university library among postgraduate students.

## CHAPTER FIVE

### 5.0 SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

This study sought to find out the extent to which various factors affect the use of electronic resources by post graduate students at the Egerton University Library. This was done by analyzing the association between age, attitude, IT skills and other experiential factors, and the use of electronic information resources. The latter constituted the independent variable while the former were the independent variables. The following section highlights the summary of findings and the conclusion and recommendations that emerge from the study.

#### 5.2 Summary of findings of the study

The findings of this study were hereby confirmed and presented in four subsections. They are presented in systematic order precisely matching the order presented in the data analysis section.

Data was analyzed to reveal the current status of use of electronic resources and the value placed by postgraduate students at the university on the same resources and how various factors influence their choice of the said resources in their academic work.

##### 5.2.1 Findings related to Influence of age of students on the use of e-resources

Based on the first objective of the study sought to find out how age influenced the use of e-resources by postgraduate students. The literature review argued that older people will have problems when forced to adapt to a new way of doing things. For example, they will find it harder to adapt to digital TV, drive a new car with unfamiliar controls and use other modern household tools and utensils (Stuart, 2007). The literature review further revealed that mature age postgraduate students studying by distance at a regional university described the reasons for barriers against participation in Web log activities as “too modern and too sophisticated (Anastavi and Cochane, 2005). The research findings in turn revealed



analyzing the association between age, attitude, IT skills and other experiential factors, and the use of electronic information resources .The latter constituted the independent variable while the former were the independent variables. The following section highlights the summary of findings and the conclusion and recommendations that emerge from the study.

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According to the findings the distribution of respondents not using electronic resources by age was as follows: 25-29 (12.5%), 30-35 (33.8%), 36-40 (34.6%), 41-45 (42.6%) and above 45 (25.0%). A cumulative of 73% of respondents in the age range of 25-40 years was using electronic resources as compared to 27% who were not using. This research noted that only 36% of the respondents aged 41 years and above were using electronic resources while an overwhelming 64% of the respondents aged 40 years and above were not using electronic

resources. Further, the study noted a significant difference in the frequency of using electronic information resources across age brackets. The results indicated that 8.4% of the post graduate students aged above 40 years were using electronic information resource very often with other responses being often (11.4%), not often (18.6%), rarely (32.0%) and never (38.1%). It was therefore concluded that the use of e- resources in search for information is more popular with the younger as compared to older post graduate students.

### **5.2.3 Findings related to the influence of Information Technology Literacy on use of electronic resources**

According to the literature review post graduate in universities lack the skills to effectively use library services due to their variant education background and previous library experiences in their countries (Ogbonya, Singh and Ohakwe, 2011). The literature review further revealed that the level of computing and internet skill with which students enter higher education might influence whether or not they use electronic information resources provided by the library.

From the research findings it was clear that a sizeable portion of the students (39.5%) did not have formal training on use of electronic information resource. However, 60.5% had such training. From the T- test results post graduate students with formal training had significantly higher familiarity with the use of e-resources as compared to their counterparts with no formal training. Similarly, the chi-square calculation done to establish the relationship between having training in the use of ICT revealed that there is a significant relationship between training on ICT and use of e-resources. Majority (54.5%) of the post graduate students with no formal training do not use e-resource as compared to 45.5% who use them. It is clear that, majority (87.1%) of the students with formal training use e-resources as compared to 12.9% who do not.

#### **5.2.4 Findings related to influence of attitude of postgraduate students on the use of e-resources**

The level of satisfaction with the electronic resources in the university is generally not satisfactory with some of them citing issues such as slow internet connectivity as a reason for the same.

Respondents rated some statements that measured their attitude on the usefulness of e-resources. The statements that sought to determine the students' attitude were: Changes brought by ICT applications are out of control, ICT helps make specific information available, ICT enables resource sharing and ICT increases efficiency in doing library searches.

Scores on level of attitude about usefulness of e-resources analysed for differences between postgraduate students using electronic resources and those not using yielded results showing that students not using electronic resources have a more negative attitude on ICT as compared to those who use. The average response by students who used electronic resources was 2.6837 (translated as 'agree') as compared to those who were not using which was of 2.4733 (translated as 'fairly agree'). It was therefore concluded that students using e-resources had more positive attitude on ICT as compared to those not the resources.

#### **5.2.5 Findings related to what the university has done to enhance the use of electronic information resources**

From the results obtained by the study, it can be concluded that indicate that purchase of more computers was the highest in terms of recommendations (27.1%). This was followed by training on ICT at 22.7%, increase of bandwidth in order to boost the internet speed (13.8%), building of bigger library (11.6%) and general infrastructural improvement (11.0%). are the main suggestions of how the institution can improve its provision of electronic information resource in the university library among postgraduate students. It is therefore clear that infrastructural development issues should be given high priority in order to improve e-resources service provision in the university library.

#### **5.4 Summary**



In this chapter findings related to how age, gender, Information Technology literacy, attitude and programme of study influence the use of e-resources. It further examines what the university has done to enhance the use of electronic resources. This led to appraisal of research questions posed from the beginning of the study. In the last chapter, which generalizes facts so established, proposals on pertinent recommendations relevant to the study are presented.

## **5.5 Conclusions and recommendations**

### **5.5.1 Recommendations**

Consequent to the study the following proposals were made as possible solutions when considering enhancement of use of e-resources by postgraduate students. It would be beneficial to tailor the use of technology to search for information as much as possible to the prevailing conditions of the respective area of coverage. Only solutions deemed suitable and relevant to the achievement of the research goals of that particular organization ought to be adopted. These recommendations can be periodically reviewed until the best results are obtained.

1. Reshaping ICT to fit better with the lives of postgraduate students
2. Promotion of Information Technology Literacy Programs
3. Promotion of gender balance in the use of e-resources
4. Efforts to change attitude of students towards e-resources through creative themes
5. Design and implementation of Collection Development Policy that involves both university library and teaching faculty members.

### **5.5.2 Conclusions**

From the onset, great importance was placed on the factors influencing the use of e-resources by postgraduate students of Egerton University. This is because library resources and especially e-resources are a backbone to success in academics. They are valuable in relation to learning, teaching, research, academic administration, and resource support. ICT is dealt with in the context of information storage, retrieval, communication, interactive learning, Management Information Systems and use technologies. The history in the use of e-resources

has shown remarkable. The e-resources enable students access a substantial amount of information online, from full- text journal databases to websites. These can supplement traditional resources that the students use in their academic quest.

Consequently the availability of internet makes it possible for postgraduate students to benefit from online venues for publishing theses and dissertations, bringing these papers out of their traditional obscurity .For instance searches on Amazon can turn up academic papers on Dissertation .com. On the other hand, CD-ROMs also promote end- user searching .It can be considered by academic libraries as the major breakthrough in technology when compared to online searching .CD-ROMs can allow students to do their own search resulting i a higher use of the library yielding in increase of services such Inter- library loan.

This study has demonstrated the importance of e-resources ,if the Egerton University Library is to provide better services to the students.

The study has also indicated the need for orientation for all students. This should be done regardless of the fact that since they have been through the university system before (at Egerton or elsewhere) then that should know how to use all library resources effectively.

As evident from this study gender imbalance balance is an impediment to use of e-resources in the library. It is useful to encourage more female students to use these resources as much as their male counterparts do.

### **5.7 Areas for further research**

This study strived to fulfil the objectives in chapter one predominantly for academic quest. The results so obtained could be used to pursue advanced research in the subject at hand. In future however, it would be beneficial if the university library could carry out such detailed studies. The research would be allocated more time so that the university library can have all the stipulated objectives covered.

A sustainable system of monitoring and evaluation be devised so as to make this a day to day work rather than a one off activity. Regular monitoring and evaluation should be conducted to establish the effectiveness of the electronic resources in meeting user needs and satisfaction

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A study should be conducted on the issue of users' opinions of "satisfactory" in terms of usefulness of e-resources. This should be approached with care, as satisfactory may have a different meaning in the mind of the student from the mind of an information professional. For instance, from the interview, a percentage of respondents were satisfied with the contents of the e-resources found in the library. However, the librarians were concerned that students were interested in high recall rather than high precision. Recall means bringing a fact, event, or situation back into one's mind, especially so as to recount it to others (Oxford Learners Dictionary). Precision means quality, condition or fact of being exact and accurate (Oxford Learners Dictionary). It is therefore important to find out whether results obtained for research by students have been obtained using refining techniques so that they come up with the most appropriate findings.

Another area that requires further research is to find out why some postgraduate students do not use the library. This is especially important because a significant number of the respondents in this study indicated that they do not use library resources.

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## Appendices

**Table      Required Size for Randomly Chosen Sample**

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	241	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381

200	132	1000	278	75000	382
210	136	1100	285	100000	384

N= Population size; S=Sample size

Source: Kathuri and Pals(1993)



b) If your answer is yes, in what format do you use library resources the most?

Electronic format only  Print format only

Both formats  None of the above

c) If your answer to question 4 is no, please give reasons why this is so.

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.....

5. What is your purpose for using library electronic information resources?

For academic research  For Communication

For Entertainment

Any other purpose

.....  
.....  
.....  
.....

6. Which method do you use to locate information that you need?

Library Manual Catalogue  Library OPAC

Library Staff  Friends

Browsing Shelves

8. Can you retrieve information through electronic resources without assistance?

Yes  With moderate Assistance  No

9. Do you have any formal training on use of electronic information?

Yes

No

10. On a scale of 1-4(Where 4 =very familiar,3=familiar,2=fairly familiar,1=unfamiliar), how would you rate your familiarity with the use of the following e- resources (indicate by ticking)

Electronic resource	1	2	3	4
Academic database				
Internet				
CD-ROM				
Library OPAC				
Egerton university students database				

11. On a scale of 1-4, how would you rate your frequency in using electronic information resources provided by the university library?

Very often	<input type="checkbox"/>	Often	<input type="checkbox"/>
Rarely	<input type="checkbox"/>	Never	<input type="checkbox"/>

12. On a scale of 1-4, for what purpose do you use the following type of electronic resources in the library?

i. Educational/Academic

Very often	<input type="checkbox"/>	Often	<input type="checkbox"/>
Rarely	<input type="checkbox"/>	Never	<input type="checkbox"/>

ii. Sport

Very Often	<input type="checkbox"/>	Often	<input type="checkbox"/>
Rarely	<input type="checkbox"/>	Never	<input type="checkbox"/>

iii. Religious

Very Often

Often

Rarely

Never

iv. News

Very Often

Often

Rarely

Never

iv. Full text article databases

Very Often

Often

Rarely

Never

13. How useful are the electronic information resources to you?

Very useful

Fairly useful

Useful

Not useful

14. On a scale of 1-4, how would you rate the following statements, where 4=strongly agree, 3=agree, 2=fairly agree, 1=disagree

Statement	1	2	3	4
Changes brought by ICT applications are out of control				
ICT helps make specific information available				
ICT enables resource sharing				
ICT Increases efficiency in doing library searches				



15. How satisfied are you with the electronic services provision by the university library?

Very satisfied	<input type="checkbox"/>
Satisfied	<input type="checkbox"/>
Fairly satisfied	<input type="checkbox"/>
Not satisfied	<input type="checkbox"/>

16. What problems do you encounter while using the above resources?

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17. What do you suggest your institution should do to solve the above problems?

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1. Please indicate the section of the library that you are in charge of

.....  
2. From your section's daily statistics and on a scale of 1- 4(where 4= very often, 3=often, 2=rarely, 1=never), how often do you serve postgraduate students in your section?

Very often 4      Often       Rarely            Never     

3. On scale of 1-4 (where 4= strongly agree,3=agree,2= fairly agree 1=disagree)how would rate the following statements?

a) Serving postgraduate students through automated systems is feasible in libraries

Strongly agree       Fairly Agree   
Agree       *Disagree*

b) In my experience at the Egerton University library, Postgraduate students have inadequate in skills in using e-resources

Strongly agree       Fairly Agree   
Agree       Disagree

c)In my opinion, postgraduate students prefer service through the library manual systems as opposed to the automated system

Strongly agree       Fairly Agree   
Agree        ee

d) More male then female post graduate students use electronic resources in the library

Strongly agree       Fairly Agree   
Agree        agree

4. In your opinion how much do postgraduate use the following resources for their academic research

	Very often	Often	Rarely	Never
Printed books	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Printed journals	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
E- Books	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
E- Journals	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

5. In your opinion how do postgraduate much the e-resources provided by the library meet the needs of post graduate students?

Very sufficiently	<input type="text"/>	Sufficiently	<input type="text"/>
Fairly Sufficiently	<input type="text"/>	Insufficiently	<input type="text"/>

6. From your section's statistics, please indicate the information sources postgraduate students use most

	Very often	Often	Rarely	Never
Printed books	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
E -Books	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Print -journals	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
E-journals	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Internet	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
CD-ROMS	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Library Manual catalogue	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Library OPAC	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



6. On a scale of 1-4 (On scale of 1-4 (where 4= strongly agree, 3=agree,2= fairly agree 1=disagree ), how would you rate post graduate students retrieval approaches

Ask a librarian	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Very often 4	Often 3	Rarely 2	Never 1
Library manual catalogue	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Very often 4	Often 3	Rarely 2	Never 1
Library OPAC	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Very often 4	Often 3	Rarely 2	Never 1
Ask friends	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Very often 4	Often 3	Rarely 2	Never 1

7. On a scale of 1-4 (On scale of 1-4 (where 4= very high, 3=high,2= moderate 1=low ), how would you rate the purpose of use of e-resources in your section

Purpose of use	1	2	3	4
Personal common/ e-mail				
Sending manuscripts for publication				
Keeping up-to-date				
Course related searches				

8. In your opinion, on scale of 1-4 (where 4= very high, 3=high, 2= moderate 1=low) indicate the search strengths of postgraduate students in using the following resources

	1	2	3	4
Using search engines				
Using website addresses				
Using CD-ROMS				
Searching full-text online journal articles				

9. In your opinion on scale of 1-4 how would you rate the university administration efforts in enhancing the provision and use of electronic resources?

	1	2	3	4
Training IT personnel				
Provision of infrastructure for IT				
Provision of e-journals and e-books				

10. What suggestions would you make to the university to enhance the use of e- resources?

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