

**UTILIZATION OF ELECTRONIC INFORMATION RESOURCES IN  
ACADEMIC LIBRARIES IN KENYA: A COMPARATIVE STUDY OF JOMO  
KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY  
(JKUAT) AND UNITED STATES INTERNATIONAL UNIVERSITY -  
AFRICA (USIU-A) UNIVERSITY LIBRARIES**

**BY**

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EDUCATION IN LIBRARY AND INFORMATION STUDIES OF  
KENYATTA UNIVERSITY**

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*Utilization of  
electronic*

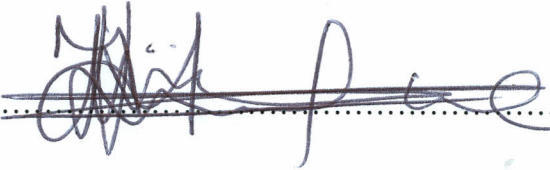


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## DECLARATION

This research project is my original work and has not been presented for examination in any other university.


Candidate



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This research project has been submitted for examination with my approval as a University Supervisor.

University

Supervisor.....

**ELISHA ONDIEKI MAKORI (M.ED –LIB. STUDIES)**

## DEDICATION

This work is dedicated to my dear parents, Joseph Horo and Hannah Wanjiru for sacrificing comfort to educate me during my early stages of life and also to my dear wife Susan and my children Wanjiru, Horo, Kamiti and Wairimu.

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**Stephen Horo**

**June, 2006**

## ACRONYMS

CHE	Commission for Higher Education
CD-ROM	Compact Disc Read Only Memory
ICT	Information Communication Technology
IT	Information Technology
IMF	International Monetary Fund
ISPs	Internet Service Providers
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KENET	Kenya Education Network
OPAC	Online Public Access Catalogue
SDI	Selective Dissemination of Information
SAPs	Structural Adjustment Programmes
TCP/IP	Transmission Control Protocol/Internet protocol
UPS	Uninterrupted Power Supply
USIU-A	United States International University- Africa
WWW	World Wide Web

## DEFINITION OF TERMS

### **Academic library**

The library of a college, university, junior college or other institutions of higher learning, organized to meet the information needs of the students, faculty and staff.

### **Electronic resources**

Materials /data and or program/s by a computerized device. This material may require the use of peripheral directly connected to a computer device, e.g. CD-ROM drive or a connection to a computer network e.g. the Internet.

### **Information Communications Technology (ICT)**

These are hardware and software that enable society to create collect consolidate and communicate information in multimedia formats and for various purposes.

### **Internet**

A huge network of interconnected computers from around the world which provides popular services like email and World Wide Web.

### **Internet Service Provider (ISP)**

A company that can give you access to the Internet from your office or home.

### **Intranet**

A small local area network within an office or building that has the same feel and look as the Internet.

## **Local Area Network (LAN)**

A small collection of interconnected computers in a building or office.

## **Library users**

Users of the library services and resources offered by a given library. Users are also variously referred to as patrons, customers and clients.

## **Utilization**

Act of using.

## **Wide Area Network (WAN)**

This is a wide area network such as the Internet.

## ABSTRACT

The purpose of this study was to assess the utilization of electronic information resources in academic libraries in Kenya with special reference to JKUAT and USIU-A libraries. The study pursued the following objectives: to establish the types and range of electronic information resources in JKUAT and USIU-A libraries: to establish the attitude of library staff towards the use of these resources: to find out the extent to which electronic information resources utilization have affected the information accessibility in the libraries: to identify the ICT facilities that affect the use of resources in the libraries: to identify the obstacles that hinder effective use of electronic information resources in the libraries: and to assess if both the library staff and users have the necessary information skills to use the resources.

To collect data, a combination of research methods: questionnaire, observation and content analysis, were used along with content analysis. Questionnaires were administered to the target population which included both users and library staff of the two libraries. Questionnaires and an observation schedule were used as research instruments. A pilot survey was conducted to ensure the validity and reliability of the instruments. Data collected was analysed by SSPS, presented and discussed according to the research objectives.

The study revealed that the academic libraries had embraced a range of electronic information resources: both staff and users make use of library resources: and the availability of these resources in the libraries had boosted staff morale. The study also revealed that majority of the staff and users had received user training. However, some staff and readers had no such training. The majority of respondents expressed the need for continuous training in the use of these resources to cope with the ever changing technology. The study further revealed several problems that hinder effective use of these resources.

The study concludes that despite the availability of these resources in libraries, space and inadequate facilities pose the biggest challenge to the effective use of these resources.

The study recommends expansion of space and increase of high speed computers. Furthermore, the library should promote and market library resources and also provide user guides.

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# CHAPTER ONE: INTRODUCTION

## 1.1 Introduction

This chapter provides background information to the study, states the problem, purpose of the study, study objectives, research questions, research assumptions, scope and significance of the study. In addition, it also includes conceptual and theoretical frameworks.

## 1.2 Background Information to the Study

Use of electronic information resources in libraries and more so in academic libraries is changing the ways the libraries are meeting the needs of their clientele. In addition, libraries are finding it increasingly difficult to acquire and make available to their users the full range of information sources in print form. At the same time the use of electronic information products and services is rapidly increasing due to application of ICT by both the information producers and providers. During the past ten years there has been an exponential growth in the number of electronic journals, online citation databases and full text aggregation acquired by the libraries McMullen, (2005).

In a study carried out in Penn State Libraries Alan, (2005, 18) observes “there was an increase in financial investment in electronic resources while funding for print resources declined” In a similar study on the use of electronic documents in libraries, Malinconico, (1995) noted “users find the electronic resources attractive and use them more heavily than print sources” As a result, libraries in response to the needs of their users and overwhelmed by the problems posed by the print journal, for example delays in publication and delivery, are increasingly making electronic information resources available through the use of the Internet and other digital formats such as CD ROMs and other CD formats. This trend is being replicated in most academic libraries in both developed and

developing countries like Kenya. Kiondo, (2004, 19) notes, "African academic libraries have been selecting, acquiring and providing electronic information services to the academic user community"

Studies done in Africa indicate that a large number of libraries are connected to the Internet. Internet access is also fairly fast. However, in a study carried out by Chisenga, (2000), it found out that most of the academic libraries with Internet access were not taking advantage of the potential provided by the Internet and use it in the provision of electronic information resources and other related information services. However, the study identified three factors that have created the current state of affairs. They include:

- ❖ Inadequate funding
- ❖ Inadequate telecommunication infrastructure
- ❖ High costs of telecommunication facilities
- ❖ General shortage of skilled IT human resources in libraries

From the above, one can conclude that academic libraries in Africa would have access to electronic information sources. However, the level of accessibility varies from one library to another depending on the funds and the state of telecommunication facilities in a given country.

In order for libraries to make use of electronic information resources available, they will require sufficient funds for the purchase and installation of IT, establishment of local networks and connection to external networks, establishment and conversion of materials to electronic format and training of library staff in various IT skills. Another study to determine usage of the campus intranet and Internet among the academic staff revealed that "those who were not using the facilities cited among other reasons as lack of guidance on how to use the Intranet, lack of technical know how and lack of useful content" Mutula, (2004, 284). In addition many more staff still preferred using manual catalogue citing service problems and slow networks, Chisenga, (2000). These problems

and others not mentioned in the studies have contributed to the underutilization of electronic information resources in most academic libraries.

Kenyan universities just like other African universities have not been left behind as far as proliferation of electronic information resources and electronic networking is concerned. Kavulya, (2004, 123) quoting Agalo, (1998) notes, "There is evidence of departure from total reliance on print-based information to the use of electronic and digital techniques in information storage and access." Most of the academic libraries in Kenya have embraced the emerging IT in the library in an effort to supplement the paper based resources which have become increasingly difficult to acquire especially in public universities due to financial constraints. This has been brought about by the reduction in government funding to public universities which rely on the government funds to finance most of their operations. On the other hand private universities rely heavily on the student tuition fees to conduct their operations e.g. funds for the library operations and purchase of books and electronic information resources.

Public universities in Kenya are beneficiaries of a World Bank project which funded the modernization of IT and information infrastructure in the universities. Mutula, (2001) notes "the purchase of computers, equipments, books and periodicals has been funded through the World Bank project" However, the project has not been popular in the universities because most of the facilities ended up in staff offices rather than in common resources such as the libraries and laboratories where they could be used by the majority users. This has slowed down the process of library automation and more so the use of electronic resources especially in public universities.

A study carried by Kavulya, (2004), revealed that both Catholic University of East Africa (CUEA) and United States University –Africa (USIU-A- A) have Online Public Access Catalogues (OPAC). Moi University and Kenyatta University also have OPAC in operation. Jomo Kenyatta University of Agriculture and Technology (JKUAT) library is in the process of inputting their records into a

computer database. Most of these academic libraries have integrated electronic and Internet based information into their collections. Kenyatta University, JKUAT and Egerton University have also established a vote for the purchase of CD-ROMs in the field of agriculture and environment, among other areas of interest to their users.

## **1.2.1 A Brief Historical Background of JKUAT and USIU-A**

### **1.2.1.1 JKUAT**

Jomo Kenyatta University of Agriculture and Technology (JKUAT) is situated in Juja, 36 Km North-East of Nairobi. The institution was started in 1981, as a middle level college, awarding diploma certificates in Agricultural Engineering, Food Technology, Horticulture, Civil, Mechanical and Electrical Engineering. In 1988, the then Jomo Kenyatta College became a constituent college of Kenyatta University and in 1994, it was transformed into a University through an Act of Parliament.

JKUAT's Mission is to be a leading University in training, research and innovation in the fields of agriculture, engineering, applied sciences, technology, and enterprise development to suit the needs of a dynamic world". The University's vision is to become a "world-class institution for development".

Currently, the University has three faculties and a school. The faculties' are-: Agriculture, Engineering, Science and the School of Architecture and Building Sciences. It also has various institutes and centres, which offer market-driven courses. In response to changing market demands, new undergraduate programmes have been developed in various faculties to meet the challenges. The new curriculum is: Geomatic, Mechatronic and Electronics and Computer Engineering. Others

are: Food Science and Nutrition, Biomechanical and Processing Engineering; Soil, Water and Environmental Engineering and Ornamental Science and Landscaping.

However, JKUAT like any other university in the world is faced with pressure to expand its students' enrollment due to its popularity, location, countrywide service and indeed the entire region. This has led to lack of space in the accommodation of students. On the teaching front, resources are also an issue.

### **1.2.1.2 JKUAT Library**

The JKUAT Library's vision is to create an information system based on state – of- the- art technology to promote scholarship. Its mission is to provide relevant information services to meet teaching, learning and research needs of the university.

JKUAT Library has had electronic information resources since the early 1990. It has a good collection of CD-ROM databases such as the essential electronic agriculture library (TEEAL), CABI and a host of other electronic information resources accessible online. The electronic resources stock has been boosted by the availability of these resources through the assistance of PERI/INASP project. The library offers circulation, reference, information searching and retrieval, Internet and email services among others.

The Library has a host of computers and their associated peripherals and is connected to the Internet through the Kenya Education Network (KENET). However, despite the availability of ICT and IT facilities and a section that coordinates the library automation project, the library is yet to realise automation. The library hopes to realise full automation in the near future. Conversion of retrospective catalogues has already been done using Tinlib software. However, the library is still shopping for a suitable library software.

The Library serves about 6000 students and 1500 non-students. The high student enrolment has forced the University to establish constituent libraries in:

- ❖ Main Campus
- ❖ Science Complex building
- ❖ Town Campus
- ❖ Karen Campus

### **1.2.1.3 USIU-A**

United States International University-Africa (USIU-A ) is located at Kasarani 20km, North East of Nairobi. USIU-A in Nairobi was founded in 1969 when it was granted a Presidential Charter making it the first and only secular university in East Africa. In 1970 USIU-A began with five American students in a house in Parklands. By 1979, the course offerings and programmes had been increased so that the entire four years, plus a master's degree could be completed in Kenya. The first graduation of USIU-A took place in 1979 with 23 students. The university status was realized in 1999 when it was given presidential assent making it a fully-fledged university.

The mission of United States International University is to provide a diverse community of learners with high quality, broad-based educational programmes that promote inquiry, mastery and application of knowledge, concepts and skills while fostering ethical leadership and responsible service to Kenya, Africa and the challenging global community.

United States International University philosophy is based on the concept of global understanding and cooperation through education. As such, USIU-A values include:

- ❖ The development of the intellectual potential and character of every individual through active participation in learning
- ❖ A probing, analytical thinking process that helps individuals to clarify and expand their beliefs and values and motivates lifelong learning
- ❖ Basic skills in communication, technology, qualitative and quantitative analysis, and research needed for future fields of work
- ❖ A learning environment which promotes and models global understanding and multicultural perspectives in all areas of academic, administrative, and student life
- ❖ Perspectives on global history, issues, concerns and applications in objective and innovative ways in all programmes
- ❖ Human, technical, material and experimental resources and opportunities which enhance the academic and non-academic life of the community
- ❖ Faculty and staff who understand in their disciplines and areas of responsibilities, objective learners, models of ethical behaviour and representative of diverse beliefs, nationalities and experiences
- ❖ The involvement of stakeholders in the design, implementation and evaluation of the university's mission and future direction

The University currently offers both undergraduates and postgraduate degree programmes in Business management, International relations, Journalism, Tourism and management, Information systems and technology, Psychology and Business administration.

#### 1.2.1.4 USIU-A Library

USIU-A Library is a modern working university library, providing a full range of high quality services based on both print and electronic media to university students, faculty, staff, alumni and external readers from other universities both in Kenya and the East African region. The library offers readers' information services such as circulation, reference, information searching and retrieval, online services among others. It has a rich collection of online databases in addition to CD-ROM databases covering the various academic programmes offered by the university.

The library currently has three floors and has over 50,000 volumes of books, journals and audiovisual materials in addition to electronic information resources. As a matter of policy the library conducts weeding of books every year to remove books, which are over ten years old. However, the library retains those books, which are classics and those with historical value.

The library operates within the vision of making "USIU-A the premier institution of academic excellence with a global perspective in East Africa."

The mission of the University is to operate within a multicultural and rapidly developing environment. The library and its staff are committed to being active and creative partners in the teaching, research and other knowledge application activities of the university through service to the community by selecting, organizing, presenting and preserving information resources for present and future scholarly communities. All the library services offered by the library are automated using the Erudite Library Software. The Library is equipped with modern ICT and IT facilities to facilitate provision and use of library services.

### 1.3 Statement of the Problem

The academic library is an important agent in the pursuit of excellence in the university system. Its goal is to support the objectives of the university, which are learning, teaching research and community services. Fidzani, (1995) states, "It is the library's responsibility to ensure that the use of its information sources, resources and services are maximized to the benefit of its users"

For the academic libraries to be able to carry out their objectives they will require a library system that not only provides the university community with the essential information resources, but also goes out of its way to reach out to the user community. For the libraries to make meaningful contribution to the achievement of these goals, Rao, (2001, 170) observes that it has to "work out strategies and actively collaborate with the publishers to satisfy the needs of the researchers and promote scholarly communication." Present libraries and more so academic ones are actively involved in incorporating electronic information resources on a networked environment to provide the much needed primary research information that is hard to come by in print form.

Academic libraries are assembling a wide range of information resources in all formats both print and non-print. At the moment these range of resources include the computer and its associated peripherals aimed at increased access to accurate, relevant and up-to-date information from both immediate and remote databases, Brophy, (2005, 57).

This has become necessary because of the current phenomena of information explosion worldwide resulting from astronomical rate, at which information is being generated in the 21<sup>st</sup> century

Okiy, (2005). For instance at the beginning of the twentieth century, there were about 12,000 journal titles, while as in the year 2000 it was estimated that there were one million journal titles. The information explosion has been further intensified by the advent of information technology especially the Internet.

Universities in Kenya have been affected by the changes that have been sweeping across the country in the recent past. For example, there has been changes in the university curriculum, which has seen numerous introduction of new degree programmes. All these changes have led to an increase in student enrolment. This increase in student population has an impact on the already inadequate information resources in the libraries. The increase requires the support of the library and information sources. Academic libraries faced with this challenge have resulted to providing electronic information resources to supplement the print sources.

The introduction of IT courses in most universities has brought up a new crop of library users who are conversant with the new developments in ICT. These types of users require timely and relevant information, which is mostly accessible electronically. The universities are making efforts to modernize and integrate technology to provide an effective service to the users. In order to do this, the universities have established websites. Mutula, (2001) observes “that these developments in information technology are giving the libraries in the country an opportunity to gain access to the Internet browsing, telecommunications and remote learning”. For example, Kenyatta University is offering distance education through Africa Virtual University programme. JKUAT in conjunction with the University of Sunderland is also offering a similar programme. This means that for this new programmes to succeed libraries have to avail information in electronic format.

Academic libraries in Kenya, both public and private suffer from under funding. Mutula, (2000, 328) quoting Jensen, (1995) points out that most organizations such as libraries, which could benefit from investment in new technology, are frequently poorly funded”. Libraries, Mutula, (2001) points out have tended to be relegated to the periphery when competing for funds with other departments. Due to inadequate funds for the libraries operations, they have in the recent past been subscribing to numerous online databases, for example, Ebscohost, Emerald, Kessing etc. This has been made

possible through a consortium of academic libraries and other institutions of higher learning in Kenya. In addition to this the libraries have a rich collection of CD-ROMs in various fields.

This consortium has enabled the libraries to avail electronic information resources to their users. This could not be possible if each library was to go it alone due to inadequate funds, which have hit the universities just like other sectors of our economy.

However, despite the availability of electronic information resources in the libraries, it has been observed that the ICT and IT facilities available in most academic libraries are outdated and therefore very slow. Libraries have not done enough marketing and promotion of these resources and so some of the users do not know whether these resources are available or not. These circumstances are hindering effective use of these resources.

From the various studies conducted by various information professionals in Kenya, it is evident that there are lots of electronic information resources, which are in use. However, the researcher feels that despite the availability of electronic information resources in academic libraries they are not fully utilized due to lack of user skills for staff and library users, poor marketing and promotion strategies among other reasons.

#### **1.4 Purpose of the Study**

The study aims at establishing the utilization of electronic information resources in academic libraries in Kenya with special reference to JKUAT and USIU-A academic libraries. In addition, the study aims at identifying whether the available electronic information resources are adequately used and/if there are any problems hindering their effective use so that it can propose some recommendations to facilitate effective use of these resources as well as proposing solutions to some of the problems hindering their effective use.

## 1.5 Objectives of the Study

The study had the following specific objectives:

- i) To identify types and range of use of electronic information resources in JKUAT and USIU-A libraries.
- ii) To identify the ICT facilities affecting use and provision of electronic information resources in the libraries
- iii) To establish the attitude of library staff towards use of electronic information resources.
- iv) To find out whether both library staff and users have the necessary information literacy skills and training in ICT to facilitate use of electronic information resources in the library.
- v) To find out obstacles that hinder effective use of electronic information resources in the libraries.
- vi) To establish the benefits realised in the use of electronic information resources
- vii) To propose recommendations for promoting effective use of electronic information resources.

## 1.6 Research Questions

The study was guided by the following seven research questions:

1. Which electronic information resources are available at JKUAT and USIU-A libraries?
2. Which are the ICT facilities affecting use of electronic information resources?.
3. What are the attitudes of information audience towards electronic information resources including the management at the higher level?
4. Do both staff and users have the necessary information literacy skills and training to facilitate use of electronic information resources?
5. Do library staff and users face any obstacles while using electronic information resources?

6. Are there any benefits in using electronic information resources?

7. Any proposals to promoting effective use of electronic information resources in academic libraries?

### **1.7 Assumptions**

1. JKUAT and USIU-A libraries have electronic information resources
2. Information audience are not adequately trained in the use of electronic information resources.
3. Information audience do not face any problems while using electronic information resources in the library.

### **1.8 Scope of the Study**

The focus of this study was the utilization of electronic information resources in academic libraries in Kenya: a comparative study of USIU-A and JKUAT libraries. The study was restricted to JKUAT and USIU-A libraries, to enable the researcher to have an in depth study. It was not possible to cover all the academic libraries in Kenya due to the following reasons.

- ❖ Electronic information resources provided by the libraries are almost similar and therefore the outcome of this study reflects the state of utilization of these resources in other public and private academic libraries in Kenya.
- ❖ It was not be possible to travel to all the academic libraries both private and public scattered across the country due to financial constrain. As a result a wider population was not possible to include in this study. In addition to the above, the study was restricted to questionnaire, personal observation and internet browsing as data collection methods.

## **1.9 Significance of the Study**

Academic libraries in Kenya for some time now have been integrating electronic information resources in their collection. This has been necessitated by increased student enrolment which has not been matched with an increase in allocation of library budget. The availability of ICT and proliferation of electronic information resources has made the world become a global village. Electronic information is readily available through the Internet and other optical media.

Though a lot has been written about these resources no similar study has been done before in the country to the best of my knowledge. The study aims at providing information about electronic information resources available in academic libraries in Kenya, the training needs as well as the attitude of both the library users and staff. In addition the study aims to establish the problems hindering effective the use of these resources in the library and the benefits realised by both library users and staff.

The findings of this study will therefore provide valuable literature for those who may wish to carry out a similar research. It can also be used as a launching pad for other extensive studies that may be carried out in this area. It will also provide some in-depth knowledge on the state of electronic information resources in the academic libraries to the policy makers and planners in the government as well as the universities administrations.

## **1.10 Conceptual Framework**

In this conceptual framework, key concepts have been identified and defined for the purpose of this study as:

(a) Library users: This refers to students both undergraduate and post graduates, the teaching and non teaching staff.

(b) Library staff. This refers to the personnel responsible for providing users with the assistance they require to facilitate their use of information resources and services.

(c) Electronic information resources: This refers to those information sources that are in digital format and accessed through use of computers and their associated peripherals.

(d) Benefits: This refers to the gains that both library users and staff realise from using electronic information.

(e) Problems. This refers to the hindrances to effective use of electronic information resources.

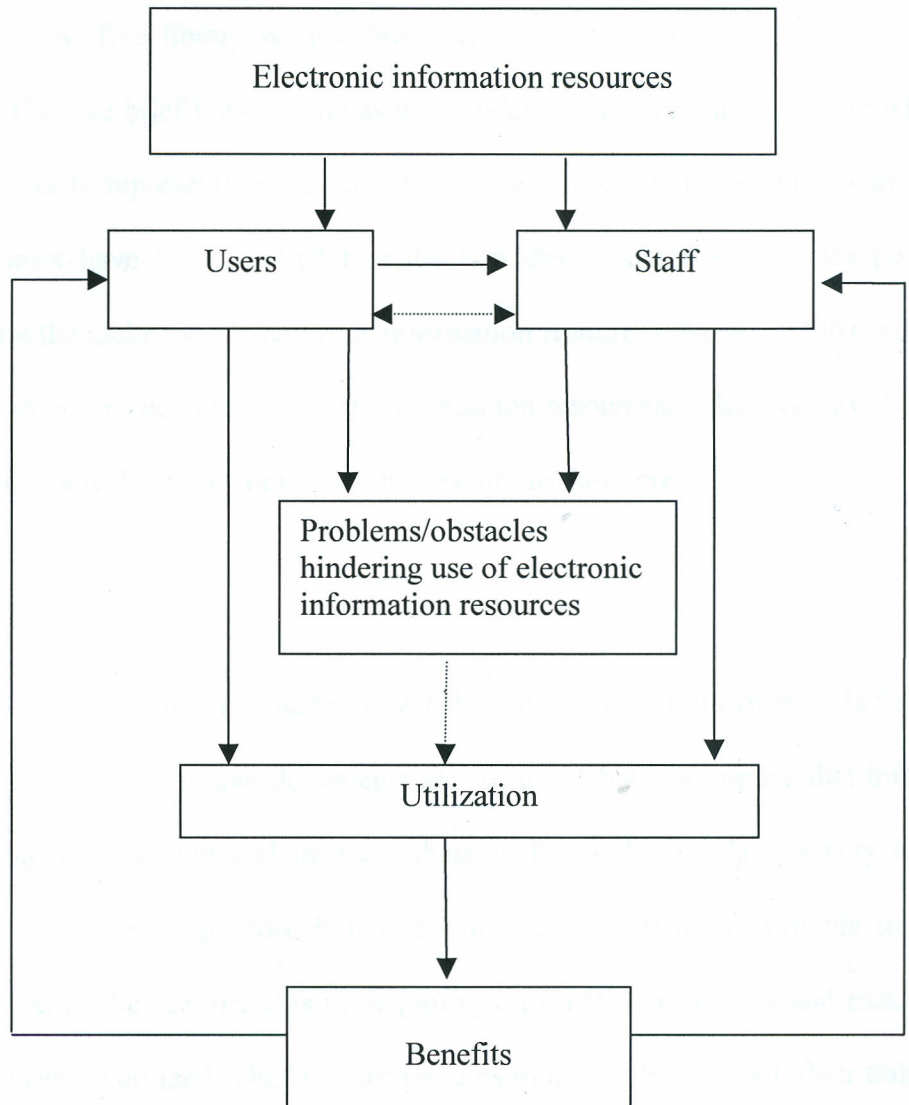
(f) Academic library. This refers to an information system that collects information sources both prints and electronic and makes them available to the users who include the student and the faculty for academic and research purposes

The conceptual framework shows how the various key concepts of this study are interrelated. The utilization of electronic information resources in academic libraries is dependent on the users and staff. Therefore the dependent variable is utilization of electronic information resources, while the independent variables are the users and library staff. If the staff are well skilled in ICT, motivated and proactive, they will enhance utilization of electronic information resources in academic libraries. This is achieved through reducing the problems/obstacles which hamper the use of these resources. Such obstacles include lack of awareness, IT skills, and inadequate ICT facilities among others. The users on the other hand can also reduce the obstacles of utilization through acquiring ICT skills or being inquisitive.

The users can access electronic information resources either directly or via library staff. However for direct access, they will need to be aware of the resources available in library (this awareness is created by the information intermediary). In an ideal situation the library staff would be expected to



## Conceptual Framework Diagram



**Source:** The Researcher (June, 2006)

In the diagram the dotted arrow indicates that access to ICT resources is constrained hence reduced. Despite the fact that some resources can be accessed without obstacles, most of them are accessed through constraints. The dotted arrow between the users and staff indicate that either the users or staff can be problems in themselves.

## **1.10 Theoretical Framework**

This study is based on the five library science laws that were postulated by Shinyali Ramrarita Ranganathan in 1931. The five brief laws remain as valid today in substance as they were when they were promulgated concisely representing the ideal service and organizational philosophy of most libraries today. The laws have been applied to collection development and service policies of today's libraries despite the inclusion of electronic information resources. Noruzi, (2004) notes, "the scope of these laws can be extended to electronic information resources. The five laws have been discussed and reused in many different contexts" The five library laws are:

### **1.10.1 Books Are For Use**

Though these laws were developed when the book was the only source of information in the library, in today's library we can rightly say that documents are for use. This law implies that information resources are for using and learning and they are there to be used. This law is very important because the information serves no purpose if it is not utilized and at least available for use for people to attempt to learn. The law pertains to acquiring information resources and making them accessible so that they can be utilized. The law also pertains to the calibre of staff, their training and attitude towards the use of resources.

### **1.10.2 Every Reader His/Her Book**

This law can be modified to read every user his/her document. This law emphasizes the need to understand the information needs of the users and providing information resources to meet those needs. The librarian must know the library users well and provide them with the material required for their research, learning and reading. The law dictates that the library serves all its users regardless of class, social, sex, age, ethnic group, religion or any other factor.

### **1.10.3 Every Book Its Reader/Every Document Its User**

The relevance of this law is that the entire information transfer process should be in conformity with the ultimate use. The law implies that the electronic information resources should be well described for example, what a given data base contain, what is the user name and password. Such information should be displayed in an attractive manner and placed appropriately for the users to use. This law leads naturally to such practices as open access rather than closed access, a coherent insight arrangement as well as adequate and concise users guides.

### **1.10.4 Save the Time of the Reader/User**

This law calls for proper organization of the resources. It implies the need to effectively and efficiently design systems that will enable the user to find what they are looking for, quickly and accurately as well as to explore the vast amount of information available that could potentially be useful. It calls for the use of ICT facilities to facilitate access to electronic information resources in addition to having well skilled staff in ICT to assist the users.

### **1.10.5 The Library is a Growing Organism**

This law implies that the library should reflect the changes occurring in our world. It should embrace the emerging ICT for it to cope with the changing information needs of the users. There is need for the library therefore to plan and build with the expectation that the library information resources and its users will grow and change over time. Similarly there is need for both the library staff and users to keep their information skills level moving forward.

These laws are applicable as they were when they were first developed, and as they will be to the library of tomorrow. They are not only applicable to the library in general but characterize the establishment and evaluation of online databases and digital library services as well. Noruzi, (2004)

notes," These five laws concisely represent the ideal service organizational philosophy the web" therefore the use of the electronic information resources can be assessed through the application of these laws.

The laws help to identify the library as a power inspiration for technological, educational and social change. The user is rightly the centre of attention in this process. It is therefore only through understanding the users needs and characteristics that the library can save the time of the user. Saving the user's time by providing convenient access should be the major concern of the library.

# CHAPTER TWO: LITERATURE REVIEW

## 2.1 Introduction

This chapter reviews existing literature on various aspects of electronic information resources in academic libraries and more so their use. The literature reviewed provides an academic background to the area of study.

## 2.2 Electronic Information Resources

Electronic information resources are materials/data and or program/s by a computerized device. These materials may require the use of peripheral directly connected to a computer device, e.g. CD-ROM drive or a connection to a computer network e.g. the Internet. This definition however, does not include the electronic resources that do not require the use of a computer such microforms, slides etc.

## 2.3 Academic Library

This is an institution responsible for collecting books and other informational materials making them available to the users for reading, study, or reference. Academic library collections have almost always contained a variety of materials. Contemporary academic libraries maintain collections that include not only printed materials such as manuscripts, books, newspapers, and magazines, but also art reproductions, films, sound and video recordings, maps, photographs, microfiches, CD-ROMs, computer software, online databases, and other media. In addition to maintaining collections within library buildings, modern libraries often feature telecommunications links that provide users with access to information at remote sites.

The central mission of an academic library is to collect, organize, preserve, and provide access to knowledge and information. In fulfilling this mission, libraries preserve a valuable record of culture that can be passed down to succeeding generations. Academic libraries are an essential link in this communication between the past, present, and future. Whether the cultural record is contained in books or in electronic formats, libraries ensure that the record is preserved and made available for later use. (Encarta Encyclopedia)

## **2.4 Electronic Information Environment**

The dawn of the 21<sup>st</sup> century has ushered in new developments in information processing and communication. A new culture has developed where business and institutions use the new information communication technologies (ICTs). Naturally and instinctively, this has influenced many aspects of our daily life such as education, business, health etc. It is no wonder that the key word of operation in the 21<sup>st</sup> century is E-based i.e. e-library, e-documents, e-business, e-commerce, e-resources etc. This e-business has transformed the world into a global information village. Brophy, (2004) notes, that the development of ICTs based infrastructure and services has led to a situation where many libraries are routinely accessing services remotely in networked environments.

Libraries are focussing on designing library information systems to support end users to access recorded knowledge, whether these records exist in analogue (print) or in digital format and are located in the local library or elsewhere on the Internet, Kochtanek, (2002). In many instances the contents being provided are drawn from the global sources. Availability of international networks based on TCP/IP has allowed libraries to connect users to distributed resources from all over the world. Using the World Wide Web (www) as a connecting tool linking the content to the end user is but one example of such global undertaking.

## **2.5 Electronic Information Resources: Types and Range of Use**

The use of electronic information resources in libraries and more so in academic libraries has been gaining popularity amongst both the users and library staff. In a study carried out to assess the use of electronic information resources in libraries Malinconco, (1998) it observed that, researchers, scholars, academic faculty and students in developed countries are increasingly getting and creating their information electronically. Electronic information is already competing quite successfully with information in the traditional printed format.

According to the study above carried out by Malinconco library users prefer electronic information sources. For example, it observed that when electronic sources such as CD-ROMs, indexes and online catalogues are introduced, users abandon the printed sources even when they are told that the electronics do not have the depth or completeness of their print counterparts. One of the libraries in the study reported that when it installed the electronic system that provides full text journal access, the students preferred using the system despite a \$0.25 per page charge rather than climb two flights of stairs to use the printed issues that were available free of charge.

### **2.5.1 Types of Electronic Information Resources**

Electronic information resources appear in different formats. Academic libraries have integrated in their collection most of the available electronic information resources.

#### **2.5.1.1 Compact Disc – Read Only Memory (CD-ROM)**

These have been around in libraries and in the market in general for a longer time compared to other electronic formats such as the electronic journal, the Internet, e-mail etc. The quality of CD-ROM products has improved over time with sophisticated interfaces becoming more available and

enabling better access to information presented. The CD-ROM materials offer better information retrieval than the printed counterparts and provide innovative learning alternatives.

Though CD-ROMs are being phased out in developed countries, the same developed countries are developing them for the developing countries markets. For example the essential electronic agricultural library (TEEAL) CD-ROM database, which is a collection of electronic journals in the field of agriculture and environment, is being used in some academic libraries in Kenya. Until recently Brophy, (2005) notes that the CD-ROMs were considered as an alternative to print” however, this is changing and more people prefer the web based information systems.

#### **2.5.1.2 Online Public Access Catalogue (OPAC)**

These are the equivalent of the traditional manual card catalogue. Before the coming of the ICT the card catalogue was the major means of guiding the user to the library collection. Information technology in libraries has led to the replacement of the manual system with online electronic systems. Chisenga, (2003, 180) notes “libraries are using dedicated telecommunication lines to access remote online databases and online catalogues”. He further observes that “libraries are putting up their library servers on the Internet and thus making available resources and facilitate millions of users around the world”.

Commercial electronic databases are being made available in the Internet. Sitting at a computer terminal, the library staff and their users are able to access not only their local library collection but also other collections located in other remote libraries through web OPAC.

Malinconco, (1995) found that several libraries in the United states including those of Colorado and San Diego State universities had began digitizing some of their collection and providing access to

them electronically. Jasper, (2005) found out that users are using the catalogue and the library website as the principal means for approaching the library collection. Most of the academic libraries in Kenya have also converted their manual catalogues into automated systems and users can access the library collection online. CUEA, USIU-A and Moi University have already converted their manual catalogues while others are in the process of converting theirs.

### **2.5.1.3 Full Text Journals**

The electronic journal is a version of the traditional print or paper based journal which is disseminated electronically in some form or other directly to the users. Though electronic journals have been around since 1976, full text journals came into the limelight in the 1990s Rao, (2001).

Electronic journal have had a great impact in academic libraries. They are popular with both researchers and students due to the nature of research information they carry and the ease of accessibility. Robertson, (2002) observes that there has been a surge in the number of electronic journals available to academic libraries for the user to access. The number of electronic journals is growing rapidly. The level and number of electronic journals tend to be heavily dependent on library budgets, the IT equipments and the licensing agreements between the publishers and the libraries. Academic libraries have a rich collection of electronic journals in various fields. The collection of these journals in libraries depends on the academic programmes offered by each respective university. Availability of these journals has been made possible by the consortia formation among the academic libraries in Kenya. However, some of these libraries do not honour their financial obligations and therefore the survival of this consortium.

#### **2.5.1.4 The Internet**

The Internet is one big virtual library and is being used as a reference tool to supplement information resources in the libraries. It provides access to unlimited sources of information and search engines are continuously being upgraded to provide efficient ways to help users find what they want. Libraries are using the Internet to create gateways to what has been termed a massive library system, where people can roam through the electronic equivalent of book stacks via a desktop workshop.

The electronic equivalent offers the ability to integrate text with charts, graphs, photographs, sound, video and other forms of multimedia. Librarians are now playing a vital role in identifying, evaluating and making available quality electronic documents. Criteria such as accuracy, comprehensiveness, balanced and accurate presentation and currency as well as style and functionality are being utilized to select Internet sites of value for their users.

The Internet contains a wealth of online course materials that are easily available to students from a distance. There are thousands of websites on the Internet that are being used by libraries to access electronic information. However, not all the websites available in the Internet have current and relevant information. Majority of Internet users will agree that relevant information is not available for free. It is available on subscription.

Despite the variety of information available in the Internet, some users still prefer using traditional sources of information. They argue that some of the information from the Internet is difficult to authenticate. Some Internet sites also contain junk information which makes users spend a lot of time trying to get relevant information.

### **2.5.1.5 Email**

This is a computer mediated system in which messages in electronic form are transmitted by various means between the sending and the receiving computers. It is the most used facility in the Internet. email is used by both the library staff and users to communicate among themselves and between the rest of the world. The library staff use it to facilitate selective dissemination of information (SDI), current awareness service, and electronic document delivery services among other services.

### **2.6 ICT and Electronic Information Resources**

Application of ICT in academic libraries has completely changed the way in which they are providing access to the variety of information resources. There is no doubt that the introduction of and use of ICT has brought demonstrable benefits to all libraries and their users. Diana, (1998, 9). ICTs are being used for OPACs with dial up connections, home videos and home based computers with a variety of peripherals and other technology fashioned to provide support to distance learners with regard to information services. Mutula, (2002, 103). Universities are using ICTs to enable electronic access to their library users. Web based OPAC are being used as gateways to access remote information resources.

Availability of ICT and access to electronic information resources have resulted to general improvement in the quality of services provided. According to Diana the downloading of cataloguing records and access to library of congress classification scheme online has freed staff for other professional work and eased the production of current awareness services like accessions lists and SDI. Academic libraries are able to access and download bibliographic information from commercial databases like OCLC, SABINET etc. However, these services are only available on subscription and hence a reserve of those who can afford it.

## 2.7 Information Literacy Skills and Electronic Information Resources

In order to utilize the growing number and range of electronic resources, library staff and users must acquire and practice the necessary skills necessary to exploit them. The librarian in charge should be ahead of the users as far as skills in the use of these resources is concerned.

The skills required to maximize the potential of electronic resources are much greater than those required for searching printed sources. Ray, (1998), identifies these skills as:

- ❖ Knowledge structure of the database
- ❖ The instructions which must be input into the computer by the searcher
- ❖ An understanding of the ways in which the instructions are linked with one another

Okiy, (2005) notes that, “power will rest on staff who possess multiple skills and the employment of librarians will be based on the skills in technology applications”. This implies that the current day librarians ought to be equipped with the latest information provision skills in order to enable the users make use of the electronic resources to their advantage. Otherwise it will not make much sense for the libraries to invest in electronic information resources only for them to remain unutilized. Other similar studies on the use of electronic information resources reveal that majority of users admit avoiding the use of electronic resources because they lack relevant skills. Ray, (1998) Several studies reveal have revealed that most users in developed countries use trial and error method, guidance from fellow users and guidance from library staff to access these resources.

In the light of the emerging emphasis upon electronic information resources use within institutions of higher learning, it is vital that the students who are the majority users of these resources should acquire relevant skills so that they do not end up being left behind in the ever prevalent information society. For the students to use the resources successfully, the library staff will be expected to have acquired the necessary skills and impart the same to the users.

Here at home the commission for higher education (CHE) has been visiting universities and other higher institutions of learning to check on the state of ICT facilities as well as their ability to mount IT related courses. Of major concern is the library and its resources both human and material. This shows that the availability of these resources and the state of ICT facilities in addition to having competent staff is of major concern to CHE, the body responsible for higher education in Kenya.

## **2.8 Access to Electronic Information Resources**

Most university libraries provide their users with various means or opportunities for enhancing their information searching. These tools are designed to help each user locate and access the most appropriate resource when required. They usually provide means by which users can be taught or acquire some of the basics of performing an information search. The availability of such means can not be underestimated in academic libraries which are faced with increased student enrolment and understaffing. This leaves the available staff with little time to attend to the users' demands. The availability of these tools alleviates the problem of users dependency on the library staff to access the information resources.

According to Hadengue, (2004, 397) these opportunities include:

- ❖ Guided tours of libraries. This is usually meant to help users better locate library information resources
- ❖ Specific aids. This may include users' guides which can be accessible online or reference materials which give answers to frequently asked questions
- ❖ Training courses. This usually requires a more significant commitment from users and trainers. The courses are intended to provide thorough knowledge in a particular area of searching. Such courses may include direct teaching by the librarians, computer based software or online information literacy e-learning.

A part from provision of guided tours, specific aids and training courses, Okiy, (2005) quoting Nwalo, (1998) identifies some factors which when put in place can help in improving access to electronic information resources. These include:

- ❖ Overwhelming commitment by all for change from manual to digital electronic library
- ❖ All problems that militate against the technological change must be diagnosed
- ❖ Changes desired and their implications must be properly understood by staff from top to bottom
- ❖ There has to be a harmonized and shared vision of how the expected technological changes and transformation will be managed
- ❖ Necessary policies, systems and structure for institutionalizing the new technological change should be put in place
- ❖ Strategies for monitoring and adjusting in response to new questions that will be raised should be put in place
- ❖ The new changes may require people learning about information communication technology and computers

These factors appear to provide solutions to the obstacles that hinder utilization of these resources. These suggestions if implemented can lead to quick and easy access by the large numbers of library users to relevant accurate and current information from both remote and immediate databases. However, most academic libraries in Kenya faced with inadequate staff with low morale rarely engage libraries users in any meaningful user instruction. Emphasis is laid on the less demanding library tour in terms of staff time and input which are conducted when the new students are admitted. This is rarely followed up leaving out those users who miss the tour with little or no knowledge at all on how to locate and use the library resources.

## **2.9 Benefits of Electronic Information Resources**

Electronic resources offer today's library users with different opportunities from their print counterparts. Brophy, (1993) has identified these benefits as:

- ❖ The information needed can be delivered from the most appropriate source to the user
- ❖ The user can re-specify his or her needs dynamically
- ❖ The information is obtained when wanted
- ❖ The user selects only information needed to answer the specific questions
- ❖ The information is only stored should the user so wish
- ❖ Information can be accessed any time, anywhere. There is no geographical or time barriers

These resources can therefore provide a number of benefits over traditional print based sources.

Generally the user opinion towards use of these resources has been positive with students enjoying using these resources with relatively few problems.

## **2.10 Obstacles Hindering Utilization of Electronic Information Resources**

Utilization of electronic information resources in libraries is not smooth sailing. It is faced by several obstacles. Studies on use of these resources have identified several obstacles. Okiy, (2005) notes the following obstacles:

- ❖ Poor and inadequate telecommunication facilities
- ❖ Poor level of computer literacy, even within the academic community
- ❖ Poor level of computer facilities
- ❖ Poor level of awareness of Internet facilities among policy makers, government officials and the ruling class in general
- ❖ Minimum involvement of academic institutions in the networks building in Africa

In addition to the above obstacles Chisenga, (2003) identified the following obstacles

- ❖ Inadequate funding. Libraries in Africa are currently among the most under funded institutions. Economic restructuring programmes, especially the International Monetary Fund (IMF) Structural Adjustment Programmes (SAPs) being implemented by various governments have resulted in sharp drop of government funding to many institutions. Funding from government to the universities is no longer adequate. This means that many libraries cannot afford to purchase and install computers in addition to establishing an Internet connection which would in turn lead to access to electronic information resources.

Inadequate funding has also made it difficult to recruit and maintain computer programmers, systems analysts and administrators as well as network administrators. Funding is also required for retraining the existing staff and equipping them with appropriate skills. Chisenga further notes that inadequate funds have led to the underutilization of electronic information resources and the Internet where these facilities are available.

Other obstacles militating against use of these resources include:

- ❖ Erratic power supply
- ❖ Ignorance on the part of the government about the vital role of information in national development
- ❖ Shortage of competent manpower for information technology operation and maintenance
- ❖ Inadequate space

## **Conclusion**

From the literature reviewed, it is clear that use of electronic information resources has been gaining prominence in academic libraries especially in the developed countries. The literature shows that a lot of research on use of these resources has been done. However, most of this research has been

done in libraries in the developed world. Here in Kenya academic libraries have embraced these resources but no research on their utilization has been done especially in JKUAT and USIU-A libraries. This shows there is a research gap. This study therefore, aims at filling this research gap

This study will use a purposive sampling strategy to select a representative sample of library staff from the two universities. The study will use a questionnaire to collect data on the utilization of electronic resources.

### 3.2 Study Area

The study will be conducted in two universities in Kenya. The study will be conducted in JKUAT and USIU-A. JKUAT is a public university and USIU-A is a private university. The study will be conducted in the libraries of these two universities. The study will be conducted in the libraries of these two universities. The study will be conducted in the libraries of these two universities. The study will be conducted in the libraries of these two universities.

### 3.3 Research Design

In this study, descriptive research design will be used. Both qualitative and quantitative analysis were used. This was the first time that a research of this kind of research has been conducted in Kenya.

### 3.4 Data Collection

The study will use a questionnaire to collect data. The study will use a questionnaire to collect data. The study will use a questionnaire to collect data. The study will use a questionnaire to collect data. The study will use a questionnaire to collect data.

# CHAPTER THREE: METHODOLOGY

## 3.1 Introduction

This chapter covers description of the area of study, research design, description of population, sampling methods, data collection methods, research instruments, data analysis and presentation, data quality control, ethical issues and limitations.

## 3.2 Area of Study

The research comprised a study of JKUAT and USIU-A libraries. The Libraries were selected due to their proximity to the researcher. The other reason is that JKUAT is a public academic library while USIU-A is a private academic library. USIU-A would provide information on the status of electronic information resources in private academic libraries while JKUAT would provide the same for public academic libraries. In addition, both libraries have integrated collections of traditional and electronic sources of information.

## 3.3 Research Design

In this study, descriptive survey design that involved both qualitative and quantitative analysis were used. This was the most suitable design because it elicited information that would have otherwise been lost by other designs.

## 3.4 Target Population

The study targeted the library users and staff. The library staff comprised the University Librarian of each university, the Section Heads and their deputies in each library. The study targeted twenty (20) library staff, 10 from each library. The library users comprised the teaching staff,

undergraduate and postgraduate students. However undergraduate First Year students were not included in the study because they had just reported and therefore had no experience in the use of electronic information resources. A population of thirty (30) users was selected from each university.

### 3.5 Sampling Methods

Two methods of sampling were used: purposive and simple random.

Purposive sampling was used to select library staff who included Chief Librarians and Heads of sections and their Assistants. These were selected purposely because the researcher felt they had crucial information for this study. Simple random sampling was used to select the library users, (students and teaching staff). This method was suitable for this study because it ensured that the population of the library users (the teaching staff, undergraduate and post graduate students) was represented.

**Table 1: Sample of Study Respondents**

Category of Respondents	Number of respondents
Library staff	20
Teaching staff	10
Postgraduate students	20
Undergraduate students	30

**Source:** (Field data)

### **3.6 Data Collection Methods**

Two methods of data collection were used in this study. These included questionnaire method and direct observation method. Direct observation was used to give first hand information and also counter check the responses given in the questionnaires

### **3.7 Data Collection Instruments**

Two data collection instruments were used in this study. These included, questionnaire and observation schedule.

#### **3.7.1 Questionnaire**

The study had two sets of questionnaires

- (i) Questionnaire for library users (Appendix I)
- (ii) Questionnaire for the library staff (Appendix II)

##### **3.7.1.1 Questionnaire for Library Users**

The questionnaire for the library users sought information on whether the library users were aware of the different types of electronic information resources in their libraries and for what purpose they were using these resources. In addition it also sought to establish the benefit that users were enjoying and if there were any problems hindering effective use of these resources.

##### **3.7.1.2 Questionnaire for Library Staff**

Library staff are responsible for the provision of information services to the library users in addition to helping them make maximum use of the available resources. In this regard, the questionnaire sought to find out how well the staff were prepared in terms of training in use of

computers and electronic information resources and how they were using these information resources. In addition the questionnaire sought to establish attitudes of staff towards use of these resources and whether there were any obstacles hindering effective use of these resources.

### **3.7.2 Observation Guide**

This was designed to enrich data collected through the questionnaire and to shed light on issues not captured in the questionnaires but were pertinent to the study.

### **3.8 Data Analysis and Presentation**

In total 80 questionnaires were administered to respondents in the two academic libraries. Out of this 67 questionnaires were returned representing 83.7%. Data was first edited and analysed using descriptive analysis. The data was then grouped according to research objectives (1.5)

Data collected was first coded by assigning a number to each questionnaire. The coded data was then fed into the computer to generate simple frequencies and percentages. Qualitative data which was not quantified was reported verbatim. Frequencies and percentages were calculated to help in data interpretation. The data was analysed using the statistical package for social sciences (SPSS). Data was presented using descriptive analysis. Pie charts and bar graphs were used where it was found appropriate to do so.

### **3.9 Data Quality Control**

#### **3.9.1 Pilot Survey**

A pilot survey was conducted on a similar population as the actual targeted population. This was conducted at Kenyatta University library. The purpose for the pilot survey was to ensure that the data collection instruments were reliable. The questionnaires were then analysed to establish the

suitability of the questions. This aimed also at establishing whether the questions asked were relevant to the study and whether the answers received were clear. Corrections were made to the questions where it was found appropriate before they were administered to the actual target population.

### **3.9.2 Triangulation**

To ensure that data collected was reasonably valid, two techniques of data collection were used. These were questionnaires and direct observation. This was meant to counter check errors that would occur in one method and therefore, ensure that the data collected was consistently valid.

### **3.10 Ethical Considerations**

The researcher duly informed the respondents about what the research was all about. The researcher assured the respondents that the information they provided would be used for the purpose of this research only. The respondents were not required to indicate their names in the questionnaire. This was aimed at building the respondents' confidence. This was also achieved through voluntary and informed consent in filling out the questionnaires. All the assistance obtained throughout this research was acknowledged. Fair use of other peoples work was also observed.

### **3.11 Limitations**

The data collection for this study coincided with student vacation. The teaching staff who were also targeted by this study were also on vacation. Due to this, the researcher had to delay the data collection. Even when the students reported back they were busy and the staff were also engaged in orientation programmes having just received the First Year students. The researcher had to keep on



# CHAPTER FOUR: PRESENTATION AND DISCUSSION OF FINDINGS

## 4.1 Introduction

This chapter presents an analysis of data collected through the use of two sets of questionnaires (for library users and staff) and observations made from the two libraries which were studied. The data collected is analysed using Statistical Package for Social Sciences (SPSS). The data from the two sets of questionnaires is interpreted and presented separately using text, frequency tables and charts and discussed according to the objectives of the study (1.5) as appropriate.

## 4.2 Background Information of the Respondents

### 4.2.1 Rate of Response

In total 80 questionnaires were administered to the respondents in the two universities libraries under study. There were two sets of questionnaires, one for the library staff and the other for the library users. 20 questionnaires were distributed to the library staff, 10 questionnaires each in JKUAT and USIU-A libraries. 30 questionnaires were distributed to the library users in each university. The library users included 15 undergraduates, 10 postgraduates and 5 teaching staff. The library staff included heads of sections and their deputies. Out of the 60 questionnaires distributed to the library users 49 were returned i.e. 81.6%. On the other hand out of the 20 questionnaires distributed to the staff, 18 were returned i.e. 90%. In total out of the 80 questionnaires distributed in the two universities 67 were returned i.e. 83.7%.

### 4.3 Questionnaire for Library Users

This was analysed according to the different aspects that were being studied as far as utilization of electronic information resources in academic libraries is concerned. Data was presented under the following headings:

- ❖ Types and range of use electronic information resources
- ❖ Training needs
- ❖ Obstacles hindering effective use of electronic resources
- ❖ Benefits of using electronic information resources

### 4.4 Types and Range of Use of Electronic Information Resources

The study aimed at finding out the types and range of use of electronic information resources in the two libraries, whether the users used them and if they did, what were the reasons for using them.

#### 4.4.1 Availability of Electronic Information Resources

All the respondents indicated that they have electronic information resources in their respective libraries. The Table below shows the type of electronic information resources identified in both libraries

**Table 2: Types of Electronic Information Resources**

Type of electronic information resources	Percentage (100%)
Electronic journals	68
Internet	92
CD-ROMs	61
Online databases	73

**Source:** (Field data)

Despite some respondents indicating that their libraries do not have the above types of resources, the researcher established through visiting the sections set aside for use of these resources that all the above types of electronic information resources are available in both libraries.

**Table 3: Use of Electronic Information Resources**

<b>Use Electronic resources</b>	<b>Frequency</b>	<b>Percentage (100%)</b>
No	4	8.2
Yes	45	91.8
Total	49	100.0

**Source:** (Field data)

The Table above shows that 91.8% of the respondents use electronic resources while only 4 respondents representing 8.2% do not. This is encouraging because it is a sign that these resources are not just there but they are being utilised. However, efforts should be made to ensure that all the academic programmes are catered for by these resources.

**Table 4: Frequency of Use of Electronic Information Resources**

<b>Period</b>	<b>Frequency</b>	<b>Percentage (100%)</b>
Rarely	11	24.4
Once a month	5	11.1
Weekly	16	35.6
Daily	13	28.9
Total	45	100.0

**Source:** (Field data)

Table 4 shows that majority of respondents use electronic resources weekly while few use them once in a month. 4 respondents did not answer the question since they had indicated that they did not use electronic information resources. (See Table 3)

#### **4.4.2 Types of Electronic Information Resources and Purpose for Use**

##### **4.4.2.1 Internet**

When the respondents were asked about the reasons why they used the Internet, they gave varied reasons. Table 5 indicates these reasons.

**Table 5: Reasons for Internet Use**

Purpose	Frequency	Percentage (100%)
Accessing online publications	42	85.7
E-mail communication	40	81.6
Consulting library's OPAC	23	46.9
Conducting database searches	37	75.
For current news/events	39	79.6
For entertainment/sports	23	46.9
For exploring what is available	32	65.3

**Source:** (Field data)

From the Table above it is clear that the number of responses is more than 100%. This is attributed to respondents giving multiple responses. The respondents gave several reasons for using the Internet. 85.7% acknowledged using Internet to access online publications, 81.6% use it for e-mail communication, 75.5% for conducting database searches, while 79.6% used it for current affairs/events. 46.9% indicated they used it for entertainment/sports and consulting the library's OPAC. Those who use library OPAC were from USIU-A library since JKUAT library does not have one.

#### 4.4.2.2 Reasons for Internet Preference

When asked about the reasons why they preferred Internet the respondents gave reasons as indicated in the table below.

**Table 6: Internet Preference**

<b>Preference</b>	<b>Frequency</b>	<b>Percentage (100%)</b>
It offers current information	31	63.3
It has no access limitation	21	42.9
One can access different websites at the same time	24	49
It provides access to other sites with related information	29	59.2
It is easy to use	22	44.9
It is faster compared to traditional sources	29	59.2

**Source:** (Field Data)

Majority of respondents 63.3% indicated they preferred Internet because it offers current, while 44.9% preferred it because it is easy to use, 42.9% because it does not have access limitation, 49% because it is possible to access different websites at the same time while 59.2% said Internet provided links to other sites with related information. 59.2% said Internet is faster compared to traditional sources. However, the responses were more than 100% due to multiple responses.

#### **4.4.2.3 Comparison Between Internet Based and Traditional Information Sources**

71.4% of the respondents said that Internet based sources were better than traditional sources. 8.2% indicated that traditional sources are better. However, 20.4% said that both sources were the same. Those who said Internet sources were better gave the following reasons for their preference:

- ❖ Internet has up-to-date/current information
- ❖ Internet allows one to go direct to the subject of interest

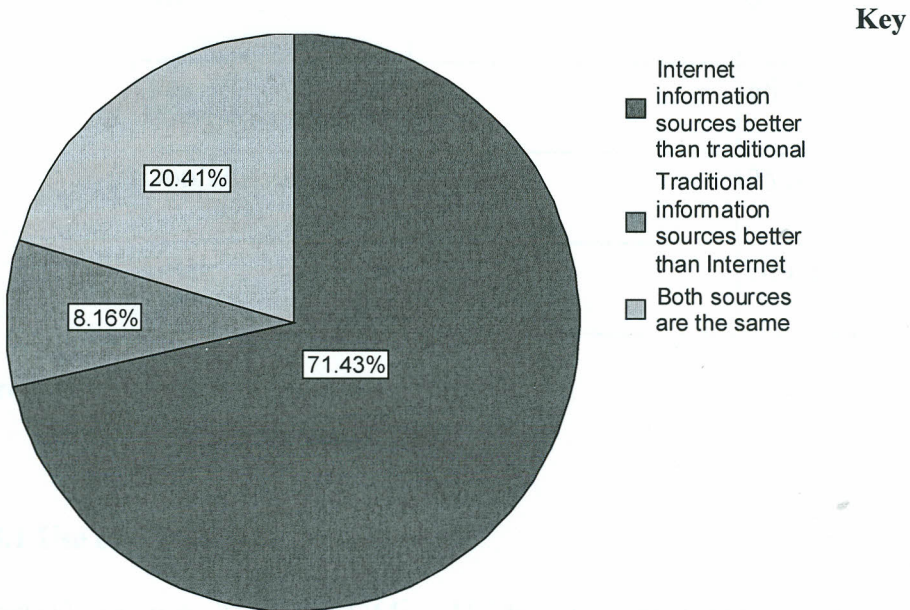
On the other hand those who said that traditional sources are better gave the following reasons

- ❖ Internet information may not be authentic

- ❖ Some Internet sources have unreliable research information

Those who indicated that both sources are the same said both are sources of information, which play complementary roles.

**Fig. 1: Comparison Between Internet Based and Traditional Information Sources**



**Source:** (Field data)

#### 4.4.3 Availability of CD-ROM Databases in the Library

The findings revealed that majority of the users were aware about the availability of CD-ROMs in their libraries. 66.7% indicated that their library has CD-ROMs databases, 8.3% said they did not have while 25% said they did not know whether the library had them or not. However, the researcher established that both libraries have a collection of CD-ROM databases through observation. Though the number of respondents who indicated they were not aware of existence of CD-ROMs may appear negligible, it should not be ignored. Efforts should be made to create

awareness about the resources available. Otherwise acquiring them and keeping them in the library is not enough. They are for use.

**Table 7: Availability of CD-ROM Databases**

Response	Frequency	Percentage (100%)
No	4	8.3
Yes	32	66.7
Don't know	12	25.0
Total	48	100.0

**Source:** (Field data)

#### 4.4.3.1 Use of CD-ROMs

In regard to use of CD-ROMs, 41.7% of respondents acknowledged using CD-ROMs monthly, 11.1% weekly, 44.4% never and 2.8% daily i.e. when the library was in operation.

**Table 8: Frequency of CD-ROMs Use**

Period	Frequency	Percentage (100%)
Never	16	44.4
Monthly	15	41.7
Weekly	4	11.1
Daily	1	2.8

**Source:** (Field data)

#### 4.4.4 Most Useful Electronic Format

The results revealed that 71.1% of the respondents found Internet to be the most useful electronic format while 64.1% found OPAC most useful. 45.2% said they found electronic journals most useful while 24.3% found electronic books most useful. 20.5% indicated they found CD-ROMs most useful. The responses were over 100% due to multiple responses. Those who indicated that they found electronic books most useful might have used them elsewhere. Observations by the researcher in both libraries showed that the libraries are yet to subscribe to electronic books.

**Table 9 Most Useful Electronic Format**

Electronic format	Most less useful		Less useful		Useful		Most useful	
	Freq.	100%	Freq.	100%	Freq.	100%	Freq.	100%
CD-ROMs	9	23.1	7	17.9	15	38.5	8	20.5
Internet	5	11.1	4	8.9	4	8.9	32	71.1
Electronic journals	8	19	7	16.7	8	19	19	45.2
Electronic books	8	21.6	10	27	10	27	9	24.3
OPAC	8	20.5	2	5.1	4	10.3	25	64.1

**Source:** (Field data)

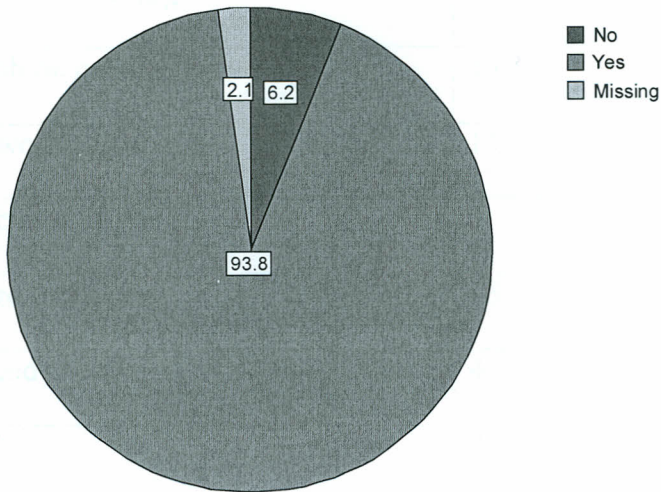
#### 4.5 Training in Use of Computers and Information Literacy Skills

##### 4.5.1 Training in the Use of Computers

93.8% acknowledged that they have had training in the use of computers and its associated peripherals while 6.3% indicated they did not have any training in the use of computers. This shows that majority of library users have ICT skills which they can use on their own instead of relying on the library staff for assistance. This revelation is very encouraging.

**Fig. 2: Training in Use of Computers**

**Key**



**Source:** (Field data)

#### 4.5.2 Type of Training

The study revealed that majority of the users (73.5%) have had training in word processing, followed by database management (51%), while 26% of the respondents indicated they had training in networking. Training in web design, spreadsheets and ICT had the least respondents i.e. 10.5%, 8.2% and 4.1% respectively. However, these responses are more than 100% due to some respondents having trained in more than one area. Although non indicated having trained in information searching and retrieval, the researcher observed that majority of the users were searching and retrieving information on their own with ease.

**Table 10: Type of Training**

Form of training	Frequency	Percentage (100%)
Database management	25	51
Networking	13	26.5
Web design	5	10.2
Word processing	36	73.5
Spread sheets	4	8.2
ICT	2	4.1

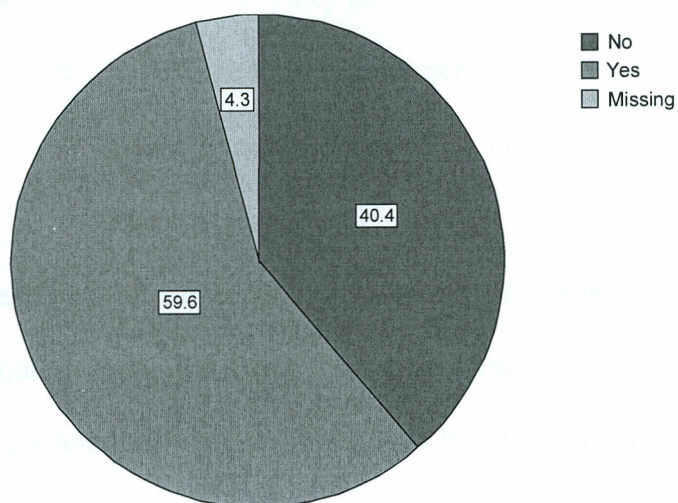
**Source:** (Field data)

#### **4.5.3 Training in the Use of Electronic Information Sources**

The study revealed that 59.6% of the respondents have training in the use of electronic information resources, while 40.4% indicated they had no training. This situation may appear reasonable but it should be of concern to those responsible for user instruction. This group of users may have difficulties in using these resources or abstain from using them altogether.

**Fig. 3: Training in Electronic Information Resources Use**

**Key**



**Source:** (Field data)

#### 4.5.4 Rating of Library Training

When asked how they rated the library training, 65.5% indicated the training was good, while 27.7% indicated that the training was very good and only 6.7% indicated the library training was poor. Table 11 explains this clearly.

**Table 11: Rating of Library Training**

Rating	Frequency	Percentage (100%)
Very good	8	27.6
Good	19	65.5
Poor	2	6.9

**Source:** (Field data)

When those who said they had no training in use of electronic information resources, were asked how they accessed them, they gave the following responses:

- ❖ Assistance from fellow users ( 47.8%)
- ❖ Through trial and error (34.8%)
- ❖ Asking a librarian (17.5%)

These results show that despite some of the users not having any training in the use of these resources they still found their way somehow. The researcher noted that while users at USIU-A library had user's guides those from JKUAT did not. These guides are necessary since they help the users to use the resources without necessarily waiting for the staff for assistance.

#### **4.5.5 Library Training Programme**

When the respondents were asked whether they felt that there was need for the library to embark on a serious training programme on the use of these resources, 91.1% indicated there was need for the library to provide users with training. 8.9 % indicated they did not feel the need for the training. This shows that there is need for the library to embark on a serious training programme if the users are to make use of electronic information resources available in their libraries.

Those who felt that there was need for a training programme gave the following reasons:

- ❖ Most of the library staff and users are electronic resources illiterate
- ❖ Training will enable the users to use them with minimum assistance and get maximum information
- ❖ Need for regular training in order to cope with changes in the information communication technology (ICT)
- ❖ To enlighten users on how to use this technology

One of the users who indicated there was no need for a training programme in the library felt that it was not necessary since there was a compulsory ICT course in his department.

When asked how they rated the training programme offered by the library the respondents gave the following response presented in the Table 12.

**Table 12: Library Training Programme**

Response	Frequency	Percentage (100%)
Very inadequate	6	13.0
Inadequate	7	15.2
Moderate	13	28.3
Adequate	14	30.4
Very adequate	6	13.0
Total	46	100.0

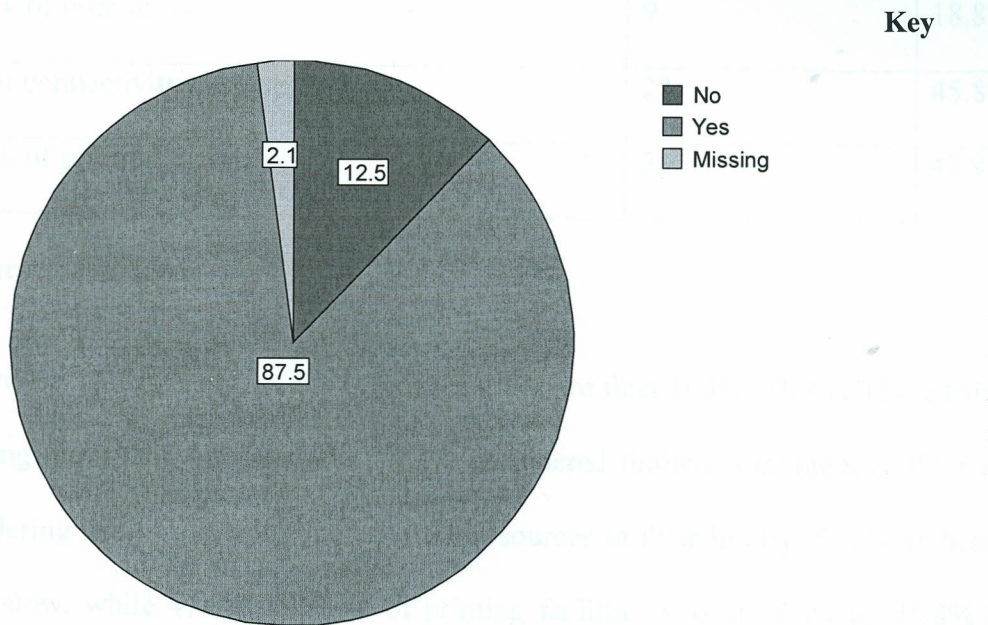
**Source:** (Field data)

The results reveal that 30.4% of the respondents felt the training offered was adequate, 28.3% said the process was moderate. In addition, 15.2% felt the training was inadequate, 13% very inadequate and the same percentage i.e. 13% very adequate. These results calls for the libraries concerned to review their library user training programmes to conform to the ever changing technology to enable users to use these resources independently.

#### 4.6 Obstacles Hindering Effective Use of Electronic Resources

The study aimed at establishing the obstacles hindering effective use of electronic information resources. Most of the respondents indicated that there were obstacles hindering use of these resources in their libraries. 87.5% said they faced obstacles while 12.5% said there were no obstacles. However, those who indicated there were no obstacles could have done so out of ignorance since there is no service without obstacles. Figure 3 explains this clearly.

**Fig 4: Any Obstacle Hindering Use of Electronic Information Resources**



**Source:** (Field data)

##### 4.6.1 Obstacles Encountered

When the respondents were asked to list the obstacles encountered while using electronic information resources, they listed varied obstacles. Table 13 summarises the responses received.

**Table 13: Obstacles Hindering Use of Electronic Resources**

<b>Obstacle</b>	<b>Frequency</b>	<b>Percentage (100%)</b>
Limited computers	38	79.2
Computers are too slow	28	58.3
Very limited time	17	35.4
Power supply disruption	9	18.8
Inadequate staff to ask for assistance while stuck	11	22.9
Lack of user skills	9	18.8
Poor connectivity to Internet	22	45.8
Lack of printing facilities	23	47.9

**Source:** (Field data)

From the statistics above, the responses are more than 100%. This can be attributed to respondents giving more than one obstacle. 79.2% considered limited computers as the most serious obstacle hindering use of electronic information resources in their library. 58.3% indicated computers were too slow, while 47.9% felt lack of printing facilities was an obstacle. 45.8% listed poor Internet connectivity as an obstacle while 35.4% listed limited time. 22.9% indicated inadequate staff to ask for assistance was an obstacle. 18.8% indicated lack of user skills and power supply disruption as obstacles. Most these obstacles were also noted in the literature review.

The results reveal that users in both libraries ranked limited computers as the most serious obstacle as far as use of electronic information resources is concerned. Lack of printing facilities was also considered as a serious obstacle mostly by users from JKUAT library. The researcher observed that while users at USIU-A were allowed to download their search results in their diskettes, users at

JKUAT were not allowed to do the same. This could explain the reason why majority of the users from JKUAT library felt that lack of printing facilities was an obstacle to the use of these resources.

Some of these problems can easily be overcome without much expense, for example, the problem of lack of printing facilities which was identified by majority of users from both universities can be overcome by having a network printer where users can print their work at a fee. Alternatively students can be allowed to save their work in diskettes to print or use it elsewhere. Libraries may need to install antivirus software that can detect the virus before they get into the system. Alternatively, they can install a commercial printer capable of handling all the users printing needs.

#### **4.7 Benefits of Using Electronic Information Resources**

The study set out to find out the benefits that were realised through the use of electronic information resources.

- ❖ The results showed that 45.8% of the respondents strongly agreed with the fact that use of electronic information resources has speeded up access to information sought, 29.2% agreed, 10.4% not sure, 4.2% disagreed and 10.4% strongly disagreed.
- ❖ About making access to information easier, 43.8% strongly agreed while 35.4% agreed. 10.4% of the respondents were uncertain, 2.1% disagreed while 8.3% strongly disagreed
- ❖ 25% of the respondents strongly agreed that use of electronic information resources enables one to download and print the required information, while 29.2% agreed. On the same note while 29.2% were not certain, 6.3% disagreed and 16.7% strongly disagreed.

- ❖ 33.3% of the respondents strongly agreed that it was possible to have access to any information regardless of its geographical location while 31.3% agreed. However, 12.5% were uncertain, 12.5% disagreed and 10.4% strongly disagreed.
- ❖ 25.5% of the respondents strongly agreed that using electronic resources has made access to information cheaper and accurate while 40.4% agreed. But 23.4% were uncertain, 4.3% disagreed while 6.4% strongly disagreed.
- ❖ 21.3% respondents strongly agreed using electronic information resources has made interaction with counterparts of similar interests to become faster and easier and 29.8% agreed. On the same note 29.8% were uncertain, 8.5% disagreed and 10.6% strongly disagreed.
- ❖ 12.5% strongly agreed that use of electronic information resources has reduced chances of duplicating research efforts while 18.8% agreed. However, 35.4% were uncertain, 18.8% disagreed and 14.6% strongly disagreed.

**Table 14: Benefits Electronic Information Resources**

<b>Benefits</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Uncertain</b>	<b>Disagree</b>	<b>Strongly disagree</b>
Has speeded up access to information sought	45.8%	29.2	10.4%	4.2%	10.4%
Has made access to information easier	43.8%	35.4%	10.4%	8.1%	8.3%
Downloading and printing of required information	25%	29.2%	22.9%	6.3%	16.7%
Access to any information regardless of its geographical location	33.3%	31.3%	12.5%	12.5%	10.4%
Has made access to information cheaper and accurate	25.5%	40.4%	23.4%	4.3%	6.4%
Has made interaction with counterparts of similar interest become faster and easier	21.3%	29.8%	29.8%	8.5%	10.6%
Has reduced chances of duplication of research efforts	12.5%	18.8%	35.4%	18.8%	14.6%

**Source:** (Field data)

## **4.8 Proposals for Improvement**

When the respondents were asked to state the areas they felt should be improved to facilitate use of these resources they proposed the following:

- ❖ Number of computers in use should be increased
- ❖ Increase of the bandwidth
- ❖ Installation of a network printer
- ❖ Replacing slow computers would improve the use. 27.1% said all
- ❖ Computers should have UPS systems
- ❖ Library operating hours should be increased
- ❖ Password and user instruction manuals

## **4.9 Questionnaire for Library Staff**

### **4.9.1 Introduction**

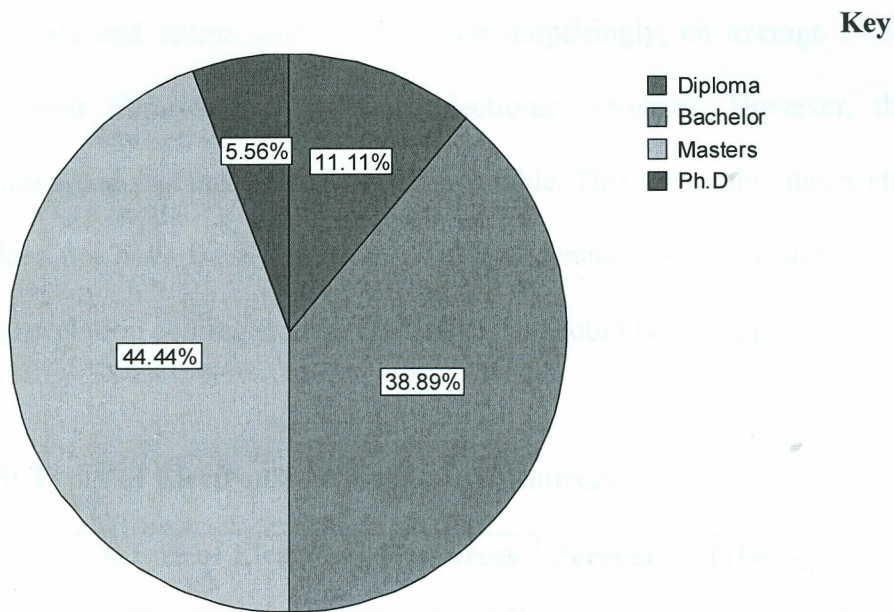
Library staff in academic libraries utilize electronic information resources in their day to day activities in the library. In addition to this they are expected to have working knowledge and skills on the utilization of these resources and the ICT facilities that facilitate their use.

The study sought to establish whether the library staff have the necessary skills to facilitate use of these resources. It also aimed at establishing their attitude towards these resources among other objectives. 20 questionnaires were administered to senior library staff and middle level staff. The data was analysed according to study objectives (1.5)

### 4.9.2 Staff Educational Background

The study revealed that 44.4% of the staff have a postgraduate qualification in library science, 39.9% had a bachelor qualification in Library Science. 5.6% had doctorate qualification in Information Science while 11.1% had diploma in the same.

**Fig. 5: Educational Background of Library Staff**



**Source:** (Field data)

### 4.9.3 Working Duration

The study revealed that 38.9% of the respondents had worked in their library for a period of 2-5 years, and the same percentage i.e. 38.9% said they had worked for over 11 years. 16.7% acknowledged that they had worked for a period of 6-10 years and 5.6% while had worked for less than one year.

#### 4.10 Electronic Information Resources and Range of Use

The study sought to establish the types and range of use of electronic information resources and how the staff used them.

##### 4.10.1 Types of Electronic Information Resources

The study revealed both libraries have electronic information resources in the form of Internet, CD-ROMs, e-mail and online journals. However surprisingly, on average 14.8% of the respondent indicated their libraries did not have electronic resources. However, the researcher through observation noted that these resources are available. This shows the library staff who indicated their library does not have these resources do not understand what electronic resources are. This is a shocking revelation coming from senior staff who should be in the know.

**Table 15: Types of Electronic Information Resources**

Nature of Electronic Resources	Percentage (100%)
Internet	88.9%
CD-ROMS	77.8%
E-mail	88.9%
Online Journal	88.9%

**Source:** (field data)

#### 4.10.2 Purpose for Use of Electronic Information Resources

Table 16 summarises the purposes for which the library staff use electronic information resources.

**Table 16: Purpose for Using Electronic Information Resource**

<b>Purpose</b>	<b>Percentage (100%)</b>
Collection development	55
Writing professional papers	83.3
Current information	94.4
Interlibrary loan	33.3
Current awareness service	83.3
Electronic document delivery	72.2
Communication with colleagues	88.9
Entertainment	50

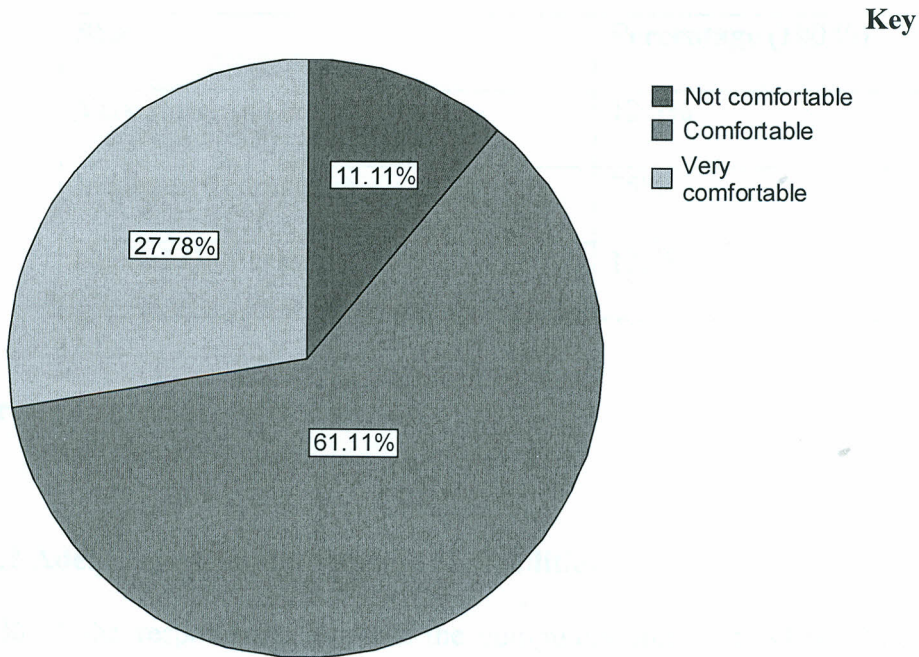
**Source: (field data)**

The results indicate over100% responses. This is due to users giving more than one purpose for using these resources. The results reveal that 94.4% use these resources for current information, 83.3 % to write professional papers and current awareness services respectively, 88.9% to communicate with colleagues, 72.2% for electronic document delivery and 55.5% for collection development. Only 33.3% used these resources for interlibrary loan.

### 4.10.3 Staff Comfortability in Regard to Use of Electronic Information Resources

61.1% of the respondents indicated they were comfortable using electronic information resources while 27.8% noted they were very comfortable and only 11.1% indicated they were not comfortable.

**Fig. 6: Staff Comfortability**



**Source:** (Field data)

### 4.11 ICT Facilities Affecting Use and Provision of Electronic Information Resources

The study aimed at identifying the ICT facilities that affect the utilization and provision of electronic information resources in academic libraries.

#### 4.11.1 Current State of Computers and IT Facilities

When the respondents were asked to highlight on the current state of computers and IT facilities in their libraries, 75% acknowledged that computers were inadequate, 12.5% indicated the computers were too slow and 12.5% indicated computers needed UPS systems.

**Table 17: Current State of Computers and IT Facilities**

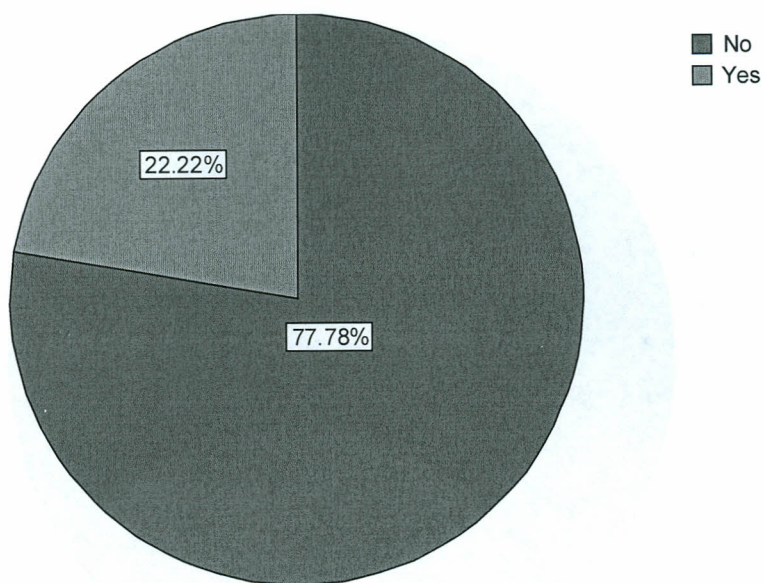
<b>State</b>	<b>Percentage (100%)</b>
Very slow	12.5%
Inadequate computers	75%
Needed UPS systems	12.5%

**Source:** (Field data)

#### 4.11.2 Adequacy of Computers and IT Facilities

75.8% of the respondents felt that the computers and other IT facilities in their libraries were enough while 22.2% indicated that the facilities were not enough. Despite the high number of library staff who indicated that there were adequate computers, observations by the researcher showed a different situation. Both libraries have inadequate computers to serve the high number of users.

**Fig. 7: Adequacy of Computers and IT Facilities**

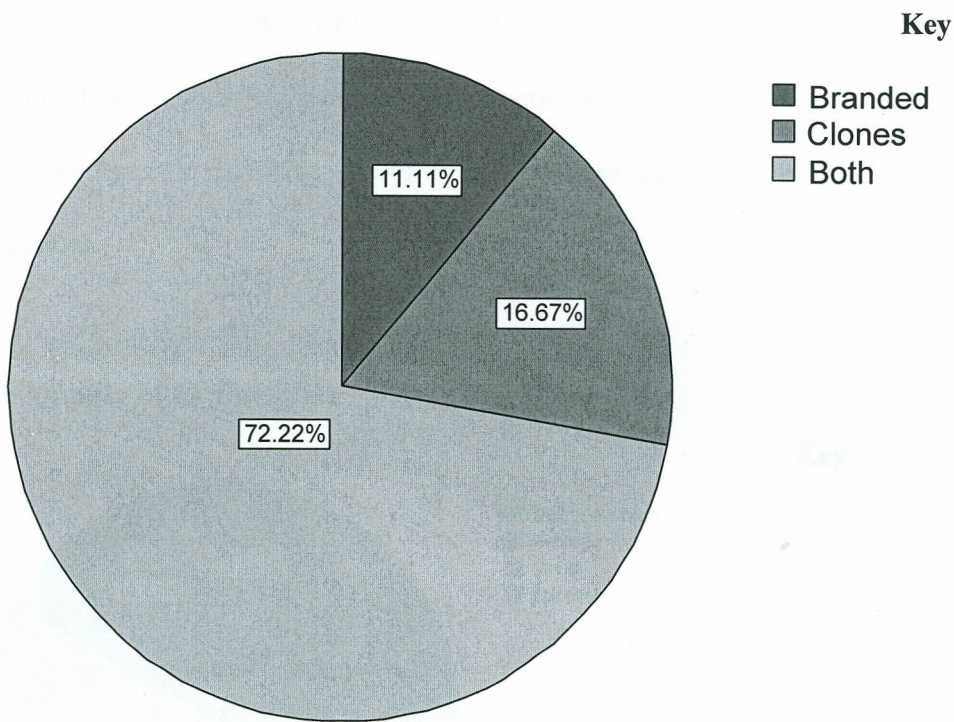


**Source:** (Field data)

#### **4.11.3 Types of Computers**

The study revealed both libraries had both branded and clone computers. The study also revealed that 94.4% of respondents had branded computers, while 5.6% had clones. The study also revealed that 72.2% of the respondents preferred both clone and branded computers, 16.7% indicated they preferred clones and 11.1% preferred branded computers.

**Fig. 8: Type of Computers Preference**



**Source:** (Field data)

Those who preferred branded computers gave the following reasons for their preference:

- ❖ Easy to maintain
- ❖ Longer lifespan
- ❖ Fast and reliable

Those who said they preferred both branded and clones gave the following reasons for their choice:

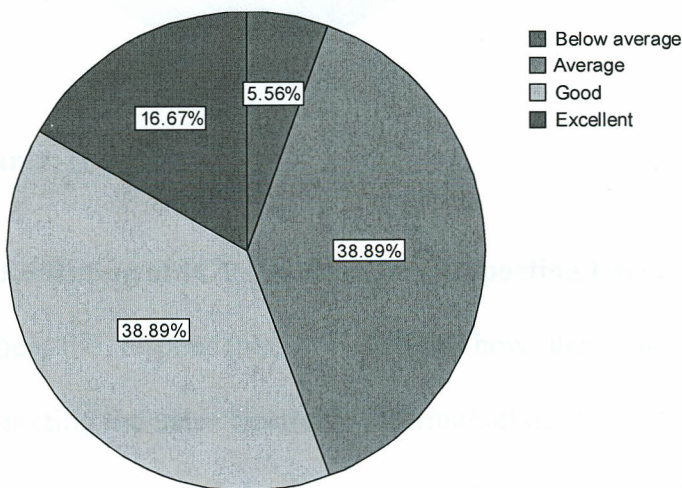
- ❖ Clones should be set aside for users
- ❖ Branded computers should be set aside for computer servers

#### 4.11.4 Rating of the Quality of IT Facilities in the Library

The study revealed that 38.9% of the respondents rated the facilities as average, 38.9% good, 16.7% excellent while 5.6% below average. This results show that there is need to improve on the existing IT facilities because effective use of these resources dependent on the quality of facilities among other factors.

**Fig. 9: Quality of IT Facilities**

**Key**

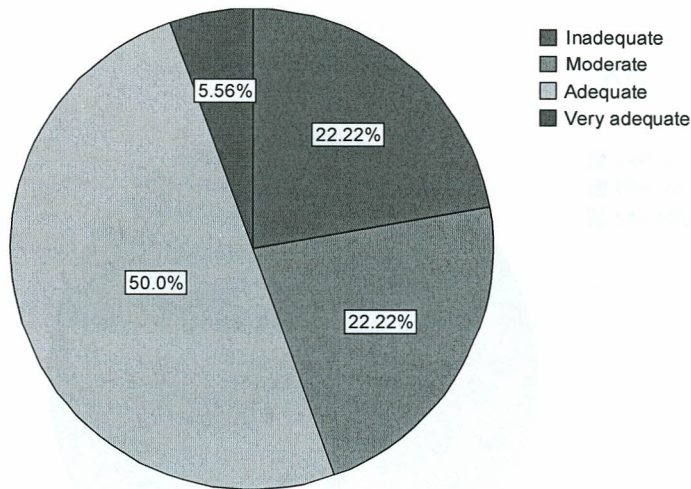


**Source:** (Field data)

#### 4.11.5 Sufficiency of Library IT Facilities

The respondents rated the facilities as adequate, moderate, inadequate representing 50%, 22.2%, and 5.6% respectively. Figure 9 shows this clearly.

**Fig. 10: Sufficiency of Library IT Facilities**

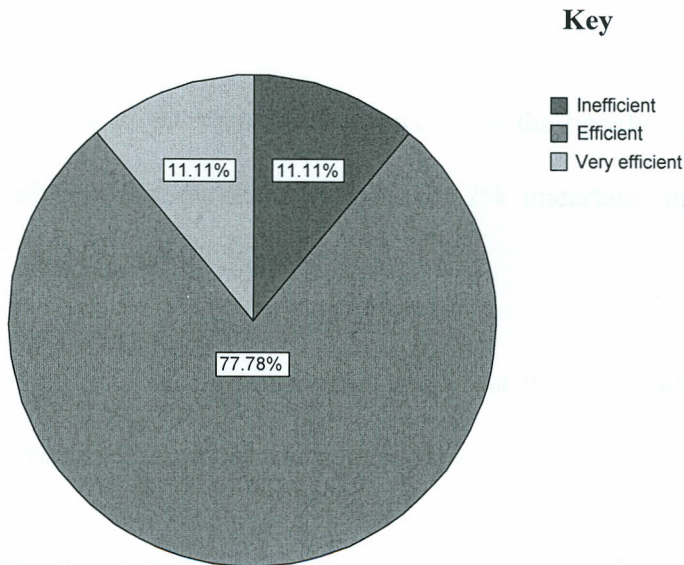


**Source:** (Field data)

#### **4.11.6 Rating of ICT Facilities for Supporting Users Information Needs**

When the respondents, were asked how they rated the information technology facilities in supporting the users electronic information needs, 77.8% indicated that the facilities were efficient, while 11.1 % noted they were very efficient, while 11.1% acknowledged that the facilities were inefficient.

**Fig.11: Rating of IT Facilities for Supporting Users Needs**



**Source:** (Field data)

#### **4.12 Staff Attitudes Towards Electronic Information Resources**

The study aimed to establish the attitudes of library staff including the management at high level towards the use of electronic information resources in the library.

- ❖ 44.4% disagreed with assertion that with electronic information resources in the library, both users and staff had all the information they needed. On the same note 38.9% agreed with the assertion while 16.7% were uncertain.
- ❖ 66.7% of the respondents disagreed that with electronic information resources in the library there will be no need for a physical library in the near future, 16.7% disagreed completely, 11.1% uncertain and only 5.6% agreed.

- ❖ 55.6% of the respondents agreed that with electronic information resources available in libraries, the role of the library and the librarian is gradually changing while 44.4% agreed completely.
- ❖ 55.6% of the respondents agreed that the benefits of using electronic information resources always out do the obstacles, 22.2% uncertain and 16.7% disagreed. Only 5.6% agreed completely.
- ❖ 38.9% of the respondents agreed that users are demanding more of electronic information resources compared to print formats, 33.3% uncertain while 5.6% agreed completely.

This indicates that generally majority of the staff in both libraries have positive attitude regarding use of electronic information resources.

#### **4.13 Training Needs on Use of Electronic Information Resources**

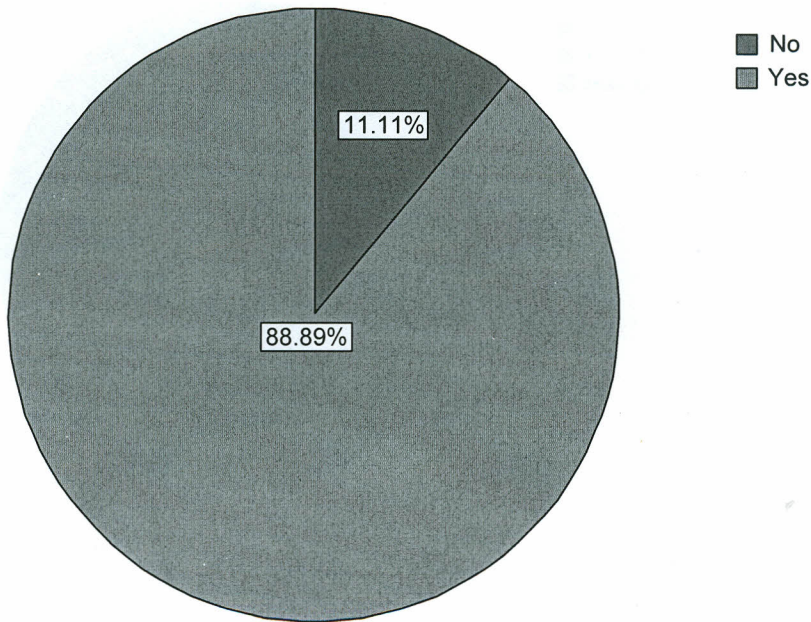
The study aimed to establish whether library staff the necessary information literacy skills and training in ICT to facilitate use of electronic information resources.

##### **4.13.1 Training in Use of Electronic Information Resources**

The study revealed that 88.9% of the staff had either formal or informal training in the use of electronic information resources, while 11.1% of the respondents indicated they did not have any training in the use of these resources. Although the results show that majority of the staff have had some training in use of these resources, effort should be made to ensure those who are not yet trained are given opportunity to train.

**Fig. 12: Training in the Use of Computers**

**Key**



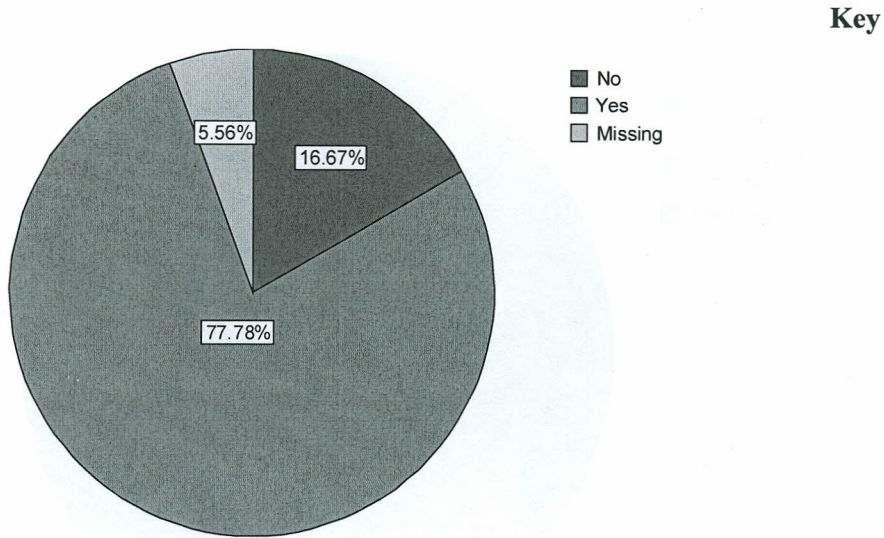
**Source:** (Field data)

The study revealed that those staff who had training in use of these resources, attained it through short courses conducted in seminars and workshops. The training covered Web design and other ICT related courses.

#### **4.13.2 Library In-House Training Programme**

82.4% of the respondents indicated that their library had an in-house training programme for the staff while 17.6% noted they did not have one. Figure 11 explains this clearly.

**Fig. 13: Library In-House Training Programme**

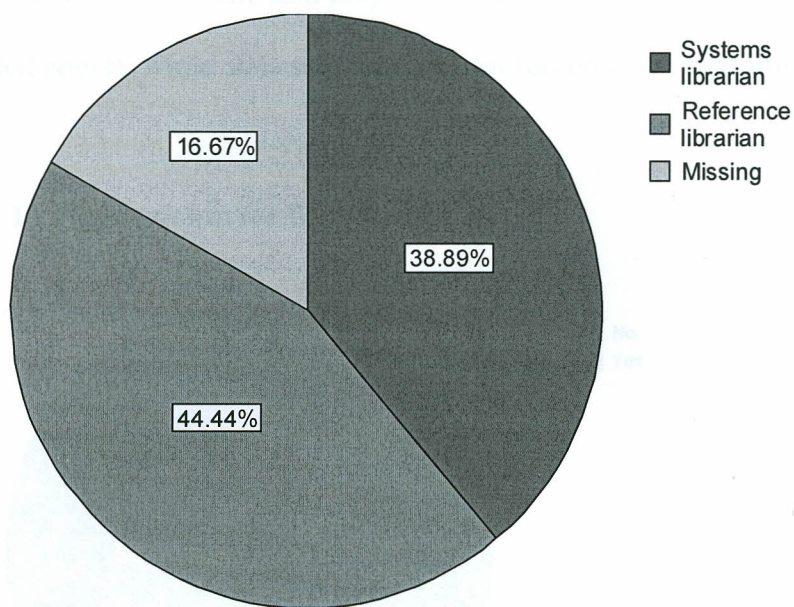


**Source:** (Field data)

Those who had training programme in their library (53.3%) indicated that the Reference Librarian was in-charge of the training while 46.7% noted the Systems Librarian was in-charge. Those who answered the question from USIU-A acknowledged that the Reference Librarian was responsible for the training programme while those from JKUAT indicated the Systems Librarian was responsible.

**Fig. 14: Staff In-Charge Of Library In-House Training Programme**

**Key**



**Source:** (Field data)

#### 4.13.3 Areas Emphasised In the Training Programme

When the respondents were asked to identify the areas emphasised in the training programme, 86.7% identified information searching and retrieval, 6.7% each identified trouble shooting and user instruction. The table below summarises the responses.

**Table 18: Areas Emphasised in Training**

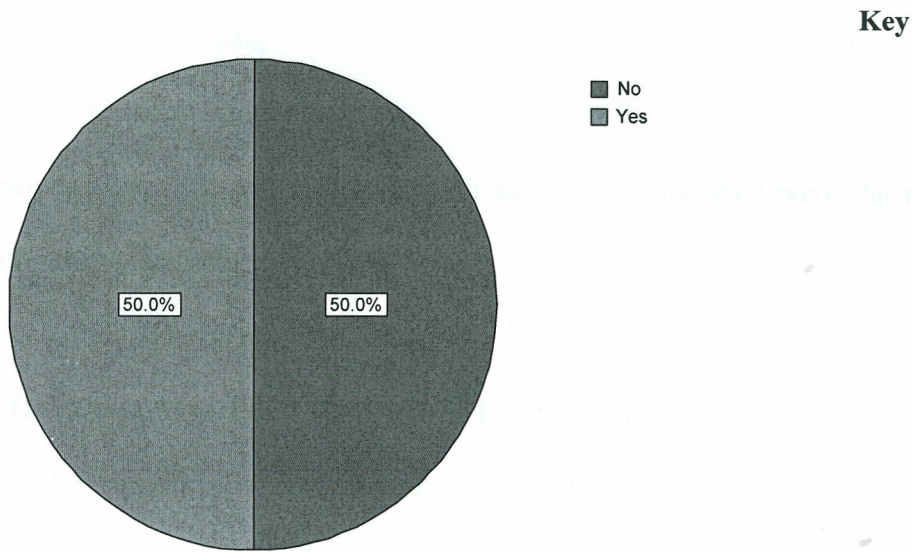
Areas emphasised	Percentage (100%)
Information searching and retrieval	86.7
Trouble shooting	6.7
User instruction	6.7

**Source** (field data)

#### 4.13.4 Sponsorship for Training by the Library

50% of the library staff said they had been sponsored by the library for an information technology related course, while 50% said they had not received any sponsorship from the library.

**Fig. 15: Sponsorship for IT Related Course**



**Source** (field data)

Those who had been sponsored for training, indicated the following as the areas they had received training:

- ❖ Electronic information retrieval (62.5%)
- ❖ Web design (12.5%)
- ❖ Trouble shooting (12.5%)

#### 4.13.5 Areas for Further Training

When asked to identify the areas they felt required further training, the respondents identified the following areas:

- ❖ Advanced information searching skills
- ❖ Archiving of electronic information resources
- ❖ Marketing
- ❖ Database management
- ❖ Search formulation
- ❖ Trouble shooting
- ❖ Video teleconferencing

Advanced searching, search formulation and trouble shooting were the most identified areas that require further training.

#### **4.14 Obstacles Associated With Use of Electronic Information Resources**

When the respondents were asked to identify the problems that affected use of electronic information resources they listed varied problems. The Table below shows the problems identified and how they weighted them.

**Table 19: Obstacles Hindering Use of Electronic Information Resources**

<b>Problems</b>	<b>Percentage (100%)</b>
Inadequate budget	61.1
Inadequate ICT facilities	61.1
Inadequate space for users	83.3
Poor power supply	38.9
Low bandwidth	66.7
Poor ISP service	44.4
Inadequate service staff with IT skills	44.4
Negative attitude by staff towards IT use	33.3
Breakdown of ICT facilities	50
Lack of computer technician	50

**Source** (field data)

The responses were more than 100 due to multiple responses. When the respondents were asked about the problem they thought was the worst, 88.3% indicated that lack of space was the worst problem affecting use of electronic information resources in academic libraries.

#### **4.14.1 Other Obstacles Hindering Effective Use of Electronic Information Resources**

when the respondents were asked to identify other obstacles other than those listed in Table 19 they gave the stated the following:

- ❖ Users spending long hours playing computer games, sending emails and chatting
- ❖ Repair of computers taking too long

#### 4.15 Benefits of Using Electronic Information Resources

The study aimed at establishing the benefits that the staff had realised as result of using these resources.

- ❖ 61.1% of the respondents strongly agreed that electronic information resources had speeded up access to information sought, 38.9% agreed and none was uncertain or disagreed.
- ❖ 50% of the respondents agreed strongly that electronic information resources had made access to information easier while 50% agreed.
- ❖ 50% strongly agreed that with electronic information resources it was possible to download and print the required information while 50% agreed.
- ❖ 55.6% agreed that with electronic information resources it was possible to access information regardless of its location 38.9% strongly agreed while 5.6% were uncertain.
- ❖ 44.4% of the respondents agreed that electronic information had made access to information easier and cheaper, 27.8% strongly agreed, 22.2% uncertain and 5.6% disagreed.
- ❖ 44.4% agreed that electronic information resources had made their interaction with counterparts of similar interest faster and easier, 38.9% strongly agreed, 11.1% uncertain and 5.6% disagreed.

- ❖ Concerning reducing chances of duplication of research efforts, 66.7% agreed. 5.6% each disagreed were uncertain and strongly disagreed respectively. 16.7% noted that they strongly agreed.

#### **4.16 Proposals for Promoting Effective Use of Electronic Information Resources in Academic Libraries**

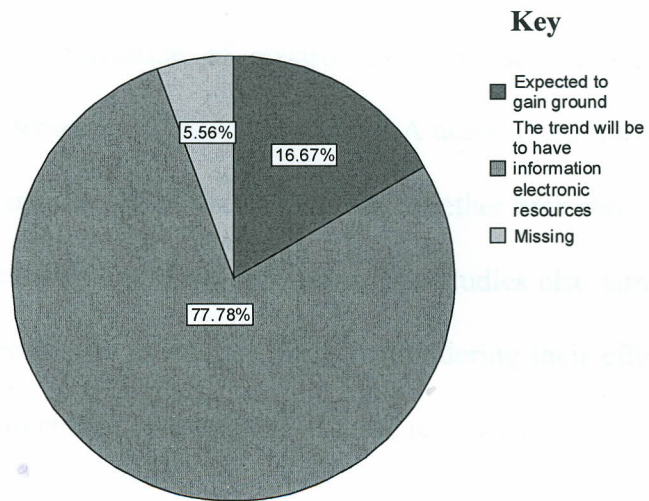
When the respondents were asked about what they thought was the best approach regarding use of electronic information resources in academic libraries, they gave the following proposals

- ❖ Use cooperative approach
- ❖ Regular training of both staff and users
- ❖ Promote the resources to potential end users
- ❖ Enhance sharing of these resources with other libraries
- ❖ Increase the bandwidth
- ❖ Lobby for a stable budget allocation
- ❖ Purchase high speed computers
- ❖ Lobby the management for acquisition of more electronic information resources

#### **4.17 Future of Electronic Information Resources in Academic Libraries in Kenya**

When the respondents were asked what they thought about the future of electronic information resources in academic libraries in Kenya, 82.4% said the trend will be to have them in libraries while 17.6% thought that they will be expected to gain ground.

**Fig. 16: Future of Electronic Information Resources in Academic Libraries in Kenya**



**Source** (field data)

# CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Introduction

The study aimed at investigating utilization of electronic information resources in academic libraries in Kenya with special reference to JKUAT and USIU-A academic libraries. Specifically it sought to identify the types and range of use of these resources, whether both staff and users had the necessary training and skills effectively use these resources. The studies also aimed at identifying the benefits derived from these resources as well as obstacles hindering their effective use so that recommendations could be made to ensure effective use of these resources.

. This chapter deals with a summary of findings, conclusions and recommendations. The summary of main findings covers the following topics derived from the study objectives:

- ❖ Types and range of use of electronic information resources
- ❖ ICT facilities affecting use of electronic information resources
- ❖ Training and information literacy skills
- ❖ Attitudes towards electronic information resources
- ❖ Problems associated with electronic information resource use
- ❖ Benefits associated with use of electronic information

## 5.2 Types and Range of Use of Electronic Information Resources

The study revealed that both universities have the following electronic resources:

- ❖ CD-ROMs
- ❖ Electronic journals
- ❖ Internet sources

- ❖ Online databases
- ❖ Web OPAC
- ❖ E-mail

The findings suggest that both staff and users are using these resources for the following purposes:

- (i) Accessing online publications
- (ii) Email communication
- (iii) Consulting library's web OPAC
- (iv) Conducting database searches
- (v) Current news
- (vi) Exploration of what is available
- (vii) Collection development
- (viii) Writing professional papers
- (ix) Interlibrary loan
- (x) Electronic document delivery
- (xi) Current awareness

### **5.3 ICT Facilities Affecting Use of Electronic Information Resources**

Availability of information communication facilities in the libraries has direct bearing on the utilization of electronic information resources. Use of these resources depends on the availability of appropriate ICT facilities. The findings show that the computers available in these libraries are inadequate, slow and unreliable. Majority of the computers do not have UPS systems and therefore when there is power blackout, users can not access these resources. The findings also revealed that branded computers which have high speed and are more durable, are reserved for staff use and servers.

## **5.4 Training and Information Literacy Skills**

Training in the use of electronic information resources is very important to both users and the staff. It enables both users and staff to use these resources independently. The findings suggest that majority of both library users and staff have training in use of computers and electronic information resources. Most had training in database management, networking, web design, and word processing. However, despite the current level of training, the findings suggest that there is need for further training in the following areas:

- ❖ Advanced information searching and retrieval
- ❖ Archiving of electronic information sources
- ❖ Marketing
- ❖ Database management
- ❖ Search formulation
- ❖ Trouble shooting
- ❖ Video conference

The study revealed libraries have been taking the issue of training seriously. A good number of respondents had been sponsored for training for short courses offered in seminars and workshops.

## **5.5 Attitudes Towards Use of Electronic Information Resources**

The findings suggest that both library users and staff have a very positive attitude towards use of these resources. They feel availability of these resources has boosted their morale and use of library resources respectively.

They also revealed that the availability of these resources in the library is changing the role of the library and the librarian. Users nowadays view the library as not only a place where they can go and borrow traditional sources of information but also where they can sit on a computer terminal and do

their searches, communicate via email etc. The role of the librarian is also changing from that of a traditional librarian to a modern ICT compliant librarian who is able to do multiple tasks at the same time e.g. conducting electronic database searches, communicating, conducting reference interview etc, simultaneously.

However, not all staff and users have a positive attitude towards these resources. Some were of the opinion that traditional sources of information will continue to occupy shelves in the library for a longer time despite the ever increasing popularity of electronic sources.

## **5.6 Benefits of Using Electronic Information Resources**

The study revealed the following benefits:

- ❖ Easy access to information
- ❖ No barrier to information regardless of its geographical location
- ❖ Easy and fast interaction with counterparts across the globe with similar interests eg. through liserve and e-mail
- ❖ Reduction in duplication of research efforts
- ❖ Access to information that would not be possible to get especially research and other information which only appear in electronic format only.
- ❖ Downloading and printing of information according to the needs of the user. It is possible to download and print desired information leaving out what is not relevant
- ❖ Fast information retrieval
- ❖ Efficient
- ❖ Possibility of combining searches
- ❖ Current information

## **5.7 Obstacles Hindering Use of Electronic Resources**

Despite the popularity of electronic information resources in academic libraries, there are a host of problems that are hindering their effective use. The problems are not unique to a particular university library but cut across libraries in developing countries. However some of the problems are more pronounced in some academic libraries than the others.

The study revealed that both staff and users are faced with the following problems

- ❖ Inadequate ICT facilities
- ❖ Slow computers
- ❖ Poor power supply
- ❖ Poor ISP services
- ❖ Inadequate budget
- ❖ Inadequate space
- ❖ Low bandwidth
- ❖ Breakdown of ICT facilities
- ❖ Lack of computer technicians
- ❖ Inadequate staff with IT skills
- ❖ Lack of printing facilities
- ❖ Some users spending too much time chatting, playing computer games
- ❖ Delay in repair of ICT facilities

## **5.8 Proposal for improving Use of Electronic Information Resources**

The findings suggest that use of these resources in libraries can be achieved through, consortia formation, promotion, organising regular training, lobbying for funds, increasing bandwidth and purchasing high speed computers.

## **5.9 Future of Electronic Information Resources in Academic Libraries in Kenya**

The study revealed that there is bright future for electronic information resources use in academic libraries in Kenya. The general feeling is that there should be more of these resources the libraries.

There is no doubt the future is bright for use of these resources in academic libraries in Kenya.

## **5.10 Conclusions**

The Researcher draws the following conclusions from the findings of the study.

1. Various types of electronic information resources are available in both academic libraries. Majority of users are aware about these resources and use them for various purposes. However, there are some who are not aware of the existence of these resources. he printed sources, and resources should be acquired to cater for all the academic programmes.
2. Information communication technology facilities are important determinants of effective use of electronic information resources. Both libraries have a fair share of information technology facilities but they are not adequate to cater for the high number of users.
3. Both staff and users have a positive attitude towards use of electronic information resources but they also feel that to some extent printed sources have more reliable and comprehensive information. They are very optimistic about the future of electronic information resources in academic libraries.
4. Majority of the users and staff, have some form of training in use of ICT facilities and therefore have no problems using these resources. However, not all have had training and so lack the necessary information literary skills to facilitate use of these resources.

5. Effective use of electronic information resources in academic libraries is hindered by several problems. These problems are not unique to academic libraries in Kenya but also affect other libraries as cited in the literature. However, most of these problems can be overcome.

6. There are benefits realised through utilization of electronic information resources.

The overall conclusion is that there is evidence of availability and use of these resources in both libraries. However, there are factors hindering their effective use. These factors relate to staff training and ICT facilities as discussed in the preceding chapter. The study has achieved all its objectives.

### **5.11 Recommendations**

The following recommendations were made

1. There is need to acquire electronic resources to cater for all the academic disciplines. An effort should be made to promote and create awareness about availability of these resources. There are users who are not aware of what is available in the library.
2. Adequate and high speed computers, preferably branded ones should be acquired to cope with the high number of users seeking to use these resources.
3. Regular training of staff at all levels should be encouraged to equip them with skills to enable them cope with the ever changing information technology. There is need to ensure that the staff are IT literate, so that they can offer effective assistance to the users.
4. The library management should find a way of overcoming the problems hindering effective use of these resources since. Most of them can be sorted out easily, for example the problem

of poor connectivity can be sorted out through replacing use of fast computers and increasing the bandwidth.

### **5.12 Areas for Further Research**

The researcher hoped that the study would be useful in identifying other areas for further research.

The research proposed the following areas for further research:

1. The role of the librarian in marketing and promotion of electronic information resources in academic libraries.
2. Strengthening the availability of library information resources through provision of electronic information resources.
3. Provision of library information services in the electronic age.

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# APPENDIX I

## QUESTIONNAIRE FOR LIBRARY USERS

### Introduction

I am a second year postgraduate student at the Department of Library Studies, Kenyatta University.

I am carrying out a study on the utilization of electronic information resources in academic libraries in Kenya, with special reference on JKUAT and USIU-A libraries.

I kindly request you to fill out this questionnaire. All the information provided will be used for the purpose of this study only and will be treated with absolute confidentiality

### INSTRUCTIONS

1. Tick appropriately in the brackets () or fill in the space provided.
2. Feel free to give further relevant information to the research which is not in the questionnaire.

### BACKGROUND INFORMATION

1. a) Name of university \_\_\_\_\_

b) Title of respondent

(a) Teaching staff

(b) Postgraduate student

(c) Undergraduate student

(d) Other (specify) \_\_\_\_\_

c) Education background

(a) Diploma

(b) Bachelor

(c) Masters

(d) Ph.D

(d) Professor

(e) Other (specify) \_\_\_\_\_

d)

Faculty/School \_\_\_\_\_

e) i) Area of specialization \_\_\_\_\_

(ii) Department \_\_\_\_\_

f) Course of study e.g. BSc. \_\_\_\_\_

g) Year of study \_\_\_\_\_

## USE AND RANGE OF ELECTRONIC INFORMATION RESOURCES

2. a) Most libraries have integrated electronic resources into their collections. In this regard, does your library have these resources?

(a) Yes

(b) No

b) If Yes to the above, identify the types of electronic resources available in your library

(a) Electronic journals

(b) Internet

(c) Online databases

(d) CD-ROMs

(e) Others (specify) \_\_\_\_\_

3. a) Do you use these resources?

- (a) Yes      (b) No

b) If Yes, how often do you use them?

- (a) Daily   (b) weekly   (c) Once a month   (d) Rarely

(e) Other (specify) \_\_\_\_\_

c) If the answer to 3.a) is No, what are the reasons for not using these resources in the library?

- (a) Do not know how to access them  
(b) The place is always crowded  
(c) There is no librarian to assist  
(d) The library hours are inconvenient for me  
(e) I use them elsewhere  
(f) Have no reason to use them  
(g) No relevant information

4. For what purpose/s do you use the Internet?

- (a) Accessing online publications  
(b) E-mail communication  
(c) Consulting library's web OPAC  
(d) Conducting database searches  
(e) For current news/events  
(f) For entertainment/sports  
(g) For exploring what is available  
(h) Others (specify) \_\_\_\_\_

5. When using the Internet, which of the following search engines do you prefer?

- (a) Google  
(b) Yahoo!

(c) Fast search

(d) Dogpile

Others (specify) \_\_\_\_\_

6. In your own opinion what do you like most about the Internet?

(a) It offers current information

(b) It has no access limitation

(c) I can access different websites at the same time

(d) It provides links to other sites with related information

(e) It is easy to use

(f) It is faster compared to the traditional sources

(g) Others (specify) \_\_\_\_\_

7. a) How would you compare Internet based information sources with traditional information sources such as books?

(a) Internet information sources are better than traditional sources

(b) Traditional sources are better than the Internet sources

(c) Both sources are the same

(d) Others (specify) \_\_\_\_\_

b) Please explain your answer above \_\_\_\_\_

\_\_\_\_\_

8. a) Does your library have CD-ROM databases?

(c) Yes

(d) I don't know

b) If Yes, how often do you use them?

- (a) Daily (b) Weekly (c) Monthly (d) Never

9. a) Does the library allow users to borrow CD-ROMs for home use?

- (a) Yes (b) No

b) Either way, explain your answer \_\_\_\_\_

10. Identify some of the CD-ROM titles acquired by your library that you consider crucial to your studies/research

i \_\_\_\_\_

ii \_\_\_\_\_

iii \_\_\_\_\_

11. Which of these electronic formats do you find most useful? Indicate using this criteria where

4 = Most useful, 3=Useful 2 = Less useful 1=Most less useful

(a) CD-ROMs 1 2 3 4

(b) Internet 1 2 3 4

(c) Electronic journals 1 2 3 4

(d) Electronic books 1 2 3 4

(e) OPAC 1 2 3 4

12. a) While in the library which sources of information do you use most?

- a) Electronic (b) Printed sources

b) In either case, give reasons for your preference \_\_\_\_\_

### TRAINING NEEDS

13. a) Have you had any training in the use of computers and its associated peripherals?

- (a) Yes (b) No

b) If Yes, what form of training have you had?

(a) Database management      (b) Networking

(c) Word processing            (d) Web design

(e) Others (specify) \_\_\_\_\_

12. a) Have you had any training in the use of electronic resources?

(a) Yes                              (b) No

b) If Yes, how would you rate the training?

(a) Very good

(b) Good

(c) Poor

(d) Other (specify) \_\_\_\_\_

13. If you have not had any training in the use of these resources, how do you access them?

(a) Through trial and error

(b) Through fellow users

(c) Ask a librarian

14. a) In your opinion, do you feel that the library should embark on a serious training programme for both staff and users in the use of these resources?

(a) Yes                              (b) No

b) In either way highlight on your answer \_\_\_\_\_

15. How would you rate the training offered by the library staff on the use of electronic information resources

(a) Very adequate

(b) Adequate

- (c) Moderate
- (d) Inadequate
- (e) Very inadequate

**OBSTACLES HINDERING EFFECTIVE USE OF ELECTRONIC RESOURCES**

16. a) Do you encounter any obstacle(s) while using electronic resources?

- (a) Yes
- (b) No

b) If Yes, which obstacle(s) do you encounter?

- (a) Limited computers
- (b) Computers are too slow
- (c) Very limited time
- (d) Power supply disruption
- (e) Inadequate staff to ask for assistance while stuck
- (f) Lack of user skills
- (g) Poor connectivity to Internet
- (h) Lack of printing facilities
- (i) Other (specify) \_\_\_\_\_

c) Which of the above do you consider to be the most serious obstacle(s)?

Briefly explain \_\_\_\_\_

---

18. Which areas would you like to be improved to facilitate use of these resources in the library?

- (a) Increase the number of computers
- (b) Increase the bandwidth
- (c) Replace slow computers

- (d) Subscription of more databases
- (e) All computers to have UPS system
- (f) Installation of a network printer
- (g) Increase library operating hours
- (h) Have password and user instruction manuals displayed appropriately
- (i) Others (specify) \_\_\_\_\_

**BENEFITS OF ELECTRONIC INFORMATION RESOURCES**

19. By applying the scale given below, rate the benefits you feel you may have obtained through the use of electronic resources in your library.

Scale 1 = Strongly disagree 2 = Disagree 3 = Uncertain 4 = Agree 5 = Strongly agree

	SUGGESTED BENEFITS	5	4	3	2	1
a	Has speeded up access to information sought					
b	Has made access to information easier					
c	Downloading and printing of required information					
d	Access to any information regardless of its location					
d	Has made access to information cheaper and accurate					
f	Has made my interaction with counterparts of similar interests to become faster and easier					
e	Has reduced chances of duplication of research efforts					
g	Others (specify)					

20. a) In your own opinion, is there anything attractive in using electronic resources compared with printed formats?

- (a) Yes
- (b) No

b) In either way, explain your answer \_\_\_\_\_

21. Any other information that you feel might help in this research \_\_\_\_\_

## APPENDIX II

### QUESTIONNAIRE FOR LIBRARY STAFF

#### Introduction

I am a second year postgraduate student at the Department of Library Studies, Kenyatta University.

I am carrying out a study on the utilization of electronic information resources in academic libraries in Kenya, with special reference on JKUAT and USIU-A libraries.

I kindly request you to fill out this questionnaire. All the information provided will be used for the purpose of this study only and will be treated with absolute confidentiality.

#### INSTRUCTIONS

1. Tick appropriately in the brackets ( ) or fill in the space provided.
2. Feel free to give further information relevant to the research and not in the questionnaire.

#### BACKGROUND INFORMATION

1. a) Name of university \_\_\_\_\_

b) Type of library?

(a) Academic Private

(b) Academic Public

c) Title of respondent \_\_\_\_\_

2) Education background

(a) Diploma

(b) Bachelor

(c) Masters

(d) Ph.D

(e) Other (specify) \_\_\_\_\_

b) For how long have you worked in this library?

(a) Below one year    (b) 2 - 5 years    (c) 6 - 10 years    (d) Over 11 years

### **INFORMATION COMMUNICATION TECHNOLOGY (ICT)**

3. a) Briefly highlight on the current state of computers and information technology facilities in the

library \_\_\_\_\_

\_\_\_\_\_

b) In your opinion, are these facilities enough?

(a) Yes    (b) No

4. What type of computers are available in your library?

(a) Branded    (c) Clones    (d) Both

b) Which of the above do you prefer? \_\_\_\_\_

c) Give reason/s for your preference \_\_\_\_\_

\_\_\_\_\_

5. How would you rate the quality of information technology facilities in your library?

(a) Excellent

(b) Good

(c) Average

(d) Below average

(e) Poor

6. How would you rate the sufficiency of your library information technology facilities in supporting the users information needs?

- (a) Very adequate
- (b) Adequate
- (c) Moderate
- (d) Inadequate
- (e) Very inadequate

7. How would you rate the above facilities in supporting the users information needs?

- (a) Very efficient
- (b) Efficient
- (c) Inefficient
- (d) Very inefficient

### **ELECTRONIC INFORMATION SOURCES**

8. What is the nature of the available electronic information resources?

- (a) Internet
- (b) CD-ROMs
- (c) E-mail
- (d) Online journals
- (e) Other (specify) \_\_\_\_\_

9. For what purposes do you use these resources?

- (a) Collection development
- (b) To write professional papers
- (c) Current information

- (d) Interlibrary loan
- (e) Current awareness
- (f) Electronic document delivery
- (g) Communication with colleagues
- (h) For entertainment
- (i) Others (specify) \_\_\_\_\_

10. Generally how has the use of electronic resources exerted on your working environment?

- (a) Has raised morale towards work
- (b) Many questions are easier to answer now
- (c) I am able to do more searches than before
- (d) I am able to know what is happening especially in the profession globally
- (e) Have improved communication process with professional colleagues
- (f) Other (specify) \_\_\_\_\_

**TRAINING NEEDS FOR USING ELECTRONIC RESOURCES**

11a) Do you have any training in use of electronic information resources?

- (a) Yes
- (b) No

b) If Yes, highlight on the nature of the training programme \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

12. a) Does your library have an in-house programme for training the staff on use of electronic resources?

- (a) Yes
- (b) No

b) If Yes, who is in charge of the training programme?

(a) University Librarian

(b) Systems Librarian

(c) Reference Librarian

(d) Other (specify) \_\_\_\_\_

b) Identify areas emphasised in the training programme?

(a) Information searching

(b) Trouble shooting

(c) User instruction

(d) Computers information and information technology

(e) Others (specify) \_\_\_\_\_

13. a) Have you ever been sponsored for any library information technology related course by the library?

(a) Yes

(b) No

b) If Yes, briefly highlight on the nature of the course \_\_\_\_\_

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14. How would you rate yourself in regard to the use of electronic resources?

(a) Very comfortable

(b) Comfortable

(c) Not comfortable

(d) Very uncomfortable

15. Computers and information technology facilities need regular maintenance. How well is your library prepared in this regard? Briefly explain \_\_\_\_\_

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16. Which areas do you think need further training as far as use of electronic information resources is concerned? Identify any three

(i)

(ii)

(iii)

17. a) In your own knowledge and experience is library staff well prepared to handle computers and information technology mediated communication services?

(a) Yes

(b) No

b) In either case, explain your answer \_\_\_\_\_

\_\_\_\_\_

18. a) Does the library have adequate staff to manage information technology related work?

(a) Yes

(b) No

b) In either case explain your answer \_\_\_\_\_

\_\_\_\_\_

## PROBLEMS ASSOCIATED WITH USE OF ELECTRONIC INFORMATION RESOURCES

19. a) Identify from the list below the problems the library is facing, while providing electronic information resources?

(a) Inadequate budget

(b) Inadequate information technology facilities e.g. computers

(c) Inadequate space to accommodate users

- (d) Power supply
- (e) Low bandwidth
- (f) Poor ISP service
- (g) Inadequate staff with information technology skills
- (h) Negative attitude by staff towards information technology
- (i) Break down of facilities
- (j) Lack of a computer technician
- (k) Other (specify) \_\_\_\_\_

b) Which of the above problem(s) is most pronounced? Briefly explain your answer \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

20. Apart from the above obstacles, what else is hindering the library from providing electronic information resources?

- (a) Library cannot cope with rising demand of electronic information resources.
- (b) Users spending long hours playing computer games, reading and sending e-mails, reading newspapers etc.
- (c) Repair of computers taking too long
- (d) Low bandwidth
- Others (specify) \_\_\_\_\_

21. Briefly highlight from your own experience what would be the best way /approach in regard to the use of electronic information resources in academic libraries in Kenya.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## BENEFITS OF USING ELECTRONIC RESOURCES

22. By applying the scale given below, rate the benefits you feel you may have obtained through the use of electronic resources in your library. Scale , 1 = Strongly disagree, 2 = Disagree, 3 =

Uncertain

4 = Agree, 5 = Strongly agree

		5	4	3	2	1
a	Has speeded up access to information sought					
b	Has made access to information easier					
c	Downloading and printing of required information					
d	Access to any information regardless of its location					
e	Has made access to information cheaper and accurate					
f	Has made my interaction with counterparts of similar interests to become faster and easier					
g	Has reduced chances of duplication of research efforts					
h	Others (specify)					

23. In your own professional opinion, what would you say about the future of electronic information resources in academic libraries in Kenya? \_\_\_\_\_

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## **APPENDIX III**

### **OBSERVATION GUIDE**

This was used by the researcher as a guide during the observation. The guide outlines the areas the researcher observed to confirm some of the information from the questionnaire.

#### **Areas Observed**

##### **1. Types and use of electronic resources**

- ❖ Electronic resources available
- ❖ Search engines used
- ❖ Availability of passwords and user-names
- ❖ Availability of users guides
- ❖ Time spent on computer terminals

##### **2. ICT Facilities**

- ❖ Types of computers available
- ❖ Number of computers available to the users
- ❖ Availability of UPS systems
- ❖ Availability of printing facilities
- ❖ Availability of computers with CD readers and coping facilities
- ❖ Speed of computers

##### **3. Other Areas of Concern**

- ❖ Adequacy of space where these resources are used
- ❖ Availability of staff to supervise the users