

**THE CHANGING ROLES OF ACADEMIC LIBRARIANS AT THE UNIVERSITY OF  
NAIROBI AND ITS CONSTITUENT COLLEGE LIBRARIES IN THE INFORMATION  
AGE**

**BY**

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**JANUARY 2016**

**DECLARATION**

**STUDENT NUMBER 37027808**

I declare that this dissertation entitled “*The changing roles of academic librarians at the University of Nairobi and its constituent college libraries in the information age*” is my own work and that all sources that I have consulted or quoted have been indicated and acknowledged by means of complete references.

M. ABELE

7<sup>th</sup> January, 2016

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This dissertation has been submitted with my approval as the supervisor:

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DATE

(PROF OMWOYO BOSIRE ONYANCHA)

**DEDICATION**

TO:

MY FAMILY: THE ABELES and

MY SONS: ALLAN CHEVI AND ALVIN ABELE

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## **LIST OF ABBREVIATIONS AND ACRONYMS**

ASCII:	American Standard Code for Information Interchange
ACRL:	Association of College and Research Libraries
BSUL:	Ball State University Library
CD-RAM:	Cassette Diskette Random Access Memory
CD-ROM:	Cassette Diskette Read only Memory
CEBIB:	Centre of Biotechnology and Bio-informatics
CAVS:	College of Agriculture and Veterinary Studies
CBPS:	College of Biological and Physical Sciences
CEES:	College of Education and External Studies
CHS:	College of Health Sciences
CHSS:	College of Humanities and Social Sciences
CAS	Current Awareness Service
EDD:	Electronic Document Delivery
FAQ:	Frequently Asked Questions
ICT:	Information Communication Technologies
IDS:	Information Delivery Services
IT:	Information Technology
IM:	Instant Messaging
IDS:	Institute of Development Studies
ISBD:	International Standard Bibliographic Description
ISBN:	International Standard Book Number
IRCU:	Industrial Research Consultancy Unit
JKUAT:	Jomo Kenyatta University of Agriculture and Technology

KLISC:	Kenya Library and Information Services Consortium
LIS:	Library and Information Science
MARC:	Machine Readable Cataloguing
OCLC:	Online Computer Library Centre
PSRI:	Population Studies and Research Institute
QMS	Quality Management System
RFID:	Radio-Frequency Identification
SDI:	Selective Dissemination of Information
SMS:	Short Message Service
SPSS:	Statistical Package for Social Science
UNESCO:	United Nations Educational, Scientific and Cultural Organization
UON:	University of Nairobi
UNISA:	University of South Africa
VOIP:	Voice over Internet Protocol

## ABSTRACT

Today, librarians are confronted with new roles during the execution of their work. The emerging roles require practical and technical skills, professional competencies and ability to perform and to constantly be in touch with those emerging technologies to stay afloat. The purpose of this research was to investigate the changing roles of academic librarians at the University of Nairobi (UoN) and its constituent college libraries in the current information age so that challenges can be established and measures put in place to overcome them. The current study employed both qualitative and quantitative approaches. The study was descriptive in nature and a survey research method was adopted. Purposive sampling was used to select respondents from each of the 13 libraries. Data was collected using a questionnaire and an interview schedule. A population of 70 respondents was to be surveyed but only 54 of them responded to the questionnaire. Quantitative data was descriptively analysed using the Statistical Package for Social Sciences (SPSS) while qualitative data was analysed using content analysis. The study revealed that the role of librarians at the UoN has not necessarily changed in terms of duties, responsibilities, functions and processes, but what has changed is the intensity and manner of conducting the role. The main challenge remains that of re-training of staff in the use of Information Communication Technologies (ICTs). Therefore the study recommended training of staff in the use of ICTs, acquiring powerful servers to increase bandwidth connectivity and allocating more funds towards various activities. The study recommends that a similar research be replicated using different groups of librarians, for example those who started working when the services were already automated to find out whether they are also as challenged as their counterparts. A further research should also be carried out to investigate current jobs that exist elsewhere in the profession, such as knowledge management, ICT management in libraries, research data management and data curation.

**Keywords:** Changing roles, academic librarians, University of Nairobi, , College libraries, academic libraries, information age.

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## CHAPTER ONE: INTRODUCTION AND BACKGROUND OF THE STUDY

### 1.1 INTRODUCTION

For a long time, librarians were only custodians of library collections. This is based on the fact that for many centuries book collecting was an opportunity either to display one's wealth or the result of scholarship (Olivia, 2007:23). Many people did not understand the work of librarians because librarians were simply looked at as custodians of the chained books (Deegan and Tanners 2002:15). It was not until the nineteenth century that library collections became more universally available and library science began to codify standards for describing and organizing resources and libraries began to move beyond merely keeping and preserving books (Olivia, 2007:24). Even Melville Dewey wrote in an early edition of the *Library Journal* that "it is not enough that books are cared for properly, are well arranged, are never lost ... (The librarian) must put every facility in the way of the readers so that they shall be led on from good to better. He must teach them how, after studying their own wants, they may themselves select their reading wisely" (Olivia, 2007:25).

Elkin (2005:78) describes a traditional librarian as a person located in the library building carrying out the tasks like acquiring, organizing, preserving the printed documents besides helping the readers to locate the information they need. Crawford and Gorman (2005:22) define the role of the librarian today as: "to acquire, organize, and give access to and safeguard carriers of knowledge and information in all forms and provide instruction and assistance in the use of all the collections to which their users have access". The Online Dictionary of Library and Information Science (2005) defines a librarian as an information professional trained in library and information science and is engaged in library service which is the organization and management of information services or materials for those with information needs. These definitions provide an indication of the roles which librarians have assumed during the final half of the twentieth century. They acquire information resources relevant to their user population in whatever format available; they organize the information within the library collection; they provide means for users to access that information; and they educate users in accessing and interpreting information resources. Librarians are now moving beyond the traditional roles of

collection, maintenance and custodial duties to wider functions of translating, accessing and marketing resources beyond the walls of the physical library building.

With the emergence of information technology (for example, the internet), it was thought that librarians would be rendered obsolete. Ramos (2007) predicated that the electronic age would wipe public bookshelves clean and permanently end the centuries old era of libraries. He also viewed the future of libraries and consequently librarians as determined by technology, and therefore predicted a diminished role for both libraries and librarians in the future (Ramos, 2007). Janice (2006:151), too, noted that rather than rendering the librarian obsolete, the digital revolution has made librarianship more essential because of the librarian's ability to link users with information resources and providing services where and when needed. Obadare (2004:12) observed that as the information explosion continues, everyone will need more help finding, sorting and filtering the available materials and that will be the work of the librarian. Elkin (2005:83), on the other hand, observes that the librarian makes a significant contribution, often defining the search, honouring the researcher's goals and helping the researcher to understand his/her needs. She believes the value of human expertise, judgment and empathy are integral to the development of the electronic library environment. Deegan and Tanner (2002:88) observe that the public image of librarians remains poor and distinctly old fashioned, while technologies lay claim to so-called electronic libraries that will apparently replace place-based librarians with a few key-strokes.

Melchionda (2007) describes the changing role of librarians as partly attributed to the consequences of new technologies and information developments. To start with, universities and colleges are investing in providing improved teaching and distance learning resource via electronic media. This calls for librarians to increase their technical knowledge, ability and skills in order to perform. Information delivery has been in the libraries for years and librarians have always been delivering information to their users. However, the question is how should this be effectively done? Today, librarians need to be conversant with the electronic delivery systems. Librarians need to make their users aware of how digital information is stored and retrieved by

imparting the skills to them. The increasing role of technology in libraries has also had a significant impact on the roles of librarians.

According to Buckland (2006), the most significant example of how technology has changed the role of librarians in the last 50 years has been the move from traditional card catalogues to online public access catalogues (OPAC). Librarians have had to purchase the computers necessary to use the software. The emergence of virtual libraries and automated services has meant that librarians change their mode of delivery of services. For instance, social networking has enabled librarians and patrons not only to interact, but also to share and exchange resources dynamically in an electronic medium. Users can now create accounts with the library network, see what others have in common with their information needs, recommend resources to one another, while a given network can also introduce users to others, based on similar profiles and previously accessed sources. According to Maness (2006), social networks enable messaging, blogging, streaming media and tagging. Maness (2006) further explains that social networks include MySpace, Facebook, Delicious, Library Thing, Frappr and Flickr. According to Maness (2006), MySpace and Facebook enable users to share information among each another; Delicious enables users to share web resources; Library Thing enables librarians to catalogue books and views how others share those books; and Flickr enables the sharing of pictures. Besides, Maness (2006) also describes Frappr as a blended network, using maps, chat rooms, and pictures to connect individuals. These networks have enjoyed popularity in web 2.0 technologies (Maness, 2006).

According to Melchionda (2007), the increasing role of technology in libraries has had a significant impact on the roles of librarians. New technologies are dramatically increasing the accessibility of information, from electronic databases to the use of Radio Frequency Identification (RFID). Melchionda (2007) further says that RFID is now used in library circulation operations and theft detection systems. RFID based systems have moved beyond security to become tracking systems that combine security with the more efficient tracking of materials throughout the library, including easier and faster charging and discharging, inventorying and materials handling. In other words, the RFID system enables speedy, simple

and user-friendly checkout, check in, putting items on hold, stock take, and daily shelf management. This technology helps librarians reduce valuable staff time spent scanning barcodes while charging and discharging items (Shahid, 2006).

O'Reilly (2006) has further observed that Web 2.0 has also enabled libraries to create new services that were not possible before, for example virtual reference, use of Wikis and Blogs, personalized OPAC interfaces, streaming media applications, folksonomies, and Instant Messaging (IM) services. The implications of this revolution in the Web are enormous and librarians are only just beginning to acknowledge them (O'Reilly, 2006). The basic idea of library 2.0 is to transform library services by making them more personalized, more interactive, more collaborative, Web-based and driven by community needs. The details of the emerging technologies such as the ones described above are discussed in chapter two which is dedicated to a literature review.

## **1.2 CONTEXTUAL SETTING**

This section discusses the context of the study and provides a background overview of the selected site of study. The study was conducted at the University of Nairobi's six colleges.

### **1.2.1 College of Humanities and Social Sciences (CHSS)**

The College of Humanities and Social Sciences is located in the main campus of the University of Nairobi. CHSS is the University of Nairobi's learning centre that teaches disciplines in humanities and social sciences. The college has the following faculties: School of Economics, Faculty of Arts, School of Business, School of Law, Institute for Development Studies (IDS), Institute of Diplomacy and International Studies, Population studies and Research Institute, Institute of Anthropology, Gender and African studies, School of Journalism, African Women Studies Centre and Centre of Translation and Interpretation. (University of Nairobi Staff Handbook, 2010). Some of the major undergraduate disciplines taught at this college include law, journalism and media studies, broadcast production, travel and tourism, hospitality management, and commerce, just to mention a few.

The CHSS has one main library located in the main campus of the University of Nairobi with another five small branches, namely: School of Business (Mwai Kibaki library) in lower Kabete, School of Law library in Parklands, Institute of Development Studies (IDS) library, Population Studies and Research Institute (PSRI) library, and the Institute of Anthropology, Gender and African Studies (IAGAs) library.

### **1.2.2 College of Health Sciences (Medical School)**

The Medical School was started in 1983 when the University decentralized its administration. The clinical departments of the school are situated at Kenyatta National Hospital while the pre-clinical departments are housed at Chiromo Campus. The School has 14 departments and thematic units with a vibrant faculty of 239 members of academic staff specialized in various fields. The School offers courses of study leading to the award of degrees of Bachelor of Medicine, Bachelor of Surgery, Bachelor of Science in Biochemistry, Bachelor of Science in Medical Physiology, Bachelor of Science in Anatomy, Master of Medicine, Master of Science, Doctor of Philosophy and Doctor of Medicine and Postgraduate Diplomas. The School is currently made up of the departments of Human Anatomy, Medical Physiology, Biochemistry, Community Health, Clinical Medicine and Therapeutics, Surgery, Paediatrics and Child Health, Obstetrics and Gynaecology, Human Pathology, Medical Microbiology, Psychiatry, Orthopaedic Surgery, Diagnostic Radiology, and Ophthalmology (University of Nairobi Medical School Prospectus, 2006:16).

### **1.2.3 College of Agriculture and Veterinary Sciences (Upper Kabete Campus)**

The College of Agriculture and Veterinary Sciences is situated off Kapenguria road 13km from the main campus. The college comprises two faculties, namely the Faculty of Agriculture and Veterinary Medicine and the Faculty of Agriculture (UON Student Information Book, 2013). Currently, students are prepared for various fields in the veterinary sciences at both the undergraduate and post graduate levels, with undergraduates beginning studies in the College of Biological and Physical Sciences in the Department of Veterinary Anatomy and Physiology at Chiromo Campus.

The Faculty of Veterinary Medicine has the following departments: Veterinary Anatomy and Physiology, Animal Production, Clinical Studies, Public Health, Pharmacology and Toxicology (PHPT), and the Veterinary Farm which is directly under the Dean of Biochemistry's office - service department (UON Student Information Book, 2013).

The Faculty of Agriculture has the following five departments: Agricultural Economics, Animal Production, Food Science Nutrition and Technology, Plant Science and Crop Protection, Animal Production and Land Resource Management of Agricultural Technology (UON Student Information Book, 2013).

#### **1.2.4 College of Architecture and Engineering**

The College of Architecture and Engineering is situated at the main campus. The college has a long history and strong tradition for quality training and resources in the area of engineering technology, the built environment studies and design. Currently, the college offers 24 degree courses at both undergraduate and post-graduate levels and has a student population of 2000 with a staff complement of 170. The college has trained the largest number of professionals in its field of specialization and contributed immensely to the development needs of the country. Beside the teaching and research mandate, the college has two units that provide avenues for outreach and community service. The College of Architecture and Engineering has the following schools: the School of Engineering, the School of Arts and Design, the School of Built Environment, the Institute of Nuclear Science and Technology and the Industrial Research Consultancy Unit (IRCU).

#### **1.2.5 College of Education and External Studies (Kikuyu Campus)**

The College of Education and External Studies (CEES) has its Headquarters at Kikuyu Campus 21km west of Nairobi. The college traces its origin back to the Department of Extra-Mural Studies which was started under Makerere University in 1953. This college has undergone various transformative changes to cope with global educational changes. The college consists of the School of Continuing and Distance Education, the Centre for Open and Distance Learning and the Open Learning and E-learning Centre. The college also has six regional centres

countrywide commonly referred to as extra mural centres. These centres are located in Nairobi, Mombasa, Kisumu, Kakamega, Nakuru, and Nyeri and are charged with the responsibility of facilitating the college and the University programmes as a whole. In spearheading global educational goals, the college has played a key role in the training of teachers for secondary and tertiary institutions in the east African region and not forgetting early childhood teachers who are also trained at the School of Education to strengthen education from the early years. As the University expanded, the college responded by making its programmes flexible and market driven. This response has resulted in an evolution of the college from the departmental status to its full college standing today.

### **1.2.6 College of Biological and Physical Sciences (Chiromo Campus)**

The College of Biological and Physical Sciences (CBPS) is located at Chiromo Campus on Riverside Drive off Waiyaki Way. It hosts the School of Biological Sciences, the School of Physical Sciences, the School of Computing and Informatics, the School of Mathematics, the Centre of Biotechnology and Bio-Informatics (CEBIB), the Pre-clinical Department of Human Anatomy, Biochemistry, Physiology and Veterinary Anatomy and Physiology, and the Examination Centre (UON Student Information Book, 2013).

## **1.3 PROBLEM STATEMENT**

Today, librarians are confronted with new<sup>1</sup> roles in information delivery, which requires practical and technical skills, professional competencies and ability to perform and to constantly be in touch with those emerging technologies to stay afloat. These dynamic roles have been necessitated partly by technological developments. However, the information and communication technologies have not gained universal acceptance and more particularly by academic librarians in the University of Nairobi and its constituent college libraries. Librarians are now, for example, charged with the responsibility of teaching information literacy and technology classes to their users. This includes training users on how to use the Online Public Access Catalogue (OPAC) and assisting users to retrieve information through the use of search

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<sup>1</sup> The term new is used to reflect many various manifestations of the innovative ways the librarians have adopted to conduct their work in libraries as opposed to novel functions, responsibilities and duties as the researcher elucidates in the dissertation.

engines such as Yahoo and Google. Librarians are also expected to acquire resources online, classify and catalogue resources by use of online classification schemes and use of Machine Readable cataloguing (MARC) formats and Metadata standards such as the Dublin Core. Collection development has now turned out to be ownership versus access; subscription to e-journals instead of print journals has become the norm; circulation services are now provided through remote login; reminders to users are done online as opposed to users having to come to the library physically to renew a book. These developments, among others, reflect the enormous task that librarians have to undertake if they are to survive in the profession or risk becoming obsolete in an increasing online world. The researcher believes that these tasks, among others, have had a great impact on the roles of current librarians. On the flip side of the coin, however, librarians feel threatened and therefore for them to survive as the primary interface to information “in any format”, training is of paramount importance (Elkin, 2005). In view of this, there is need to examine the changing roles of academic librarians at the University of Nairobi and its constituent college libraries in respect of the current information age.

### **1.3.1 Purpose of the study**

The purpose of the study will be to examine the changing roles of academic librarians at the University of Nairobi and its other constituent colleges in the context of the current information age.

### **1.3.2 Objectives of the study**

In view of the above mentioned purpose, the study seeks to address the following objectives in the context of the University of Nairobi and its constituent college libraries:

- i. To find out the extent to which the functions as well as processes and procedures in libraries have changed in view of the current information age;
- ii. To examine the competencies and skills required of librarians in the current information age;
- iii. To determine the effects of technology on the roles of librarians;
- iv. To establish the challenges facing librarians in their new roles; and
- v. To recommend measures that will help librarians overcome the challenges.

### 1.3.3 Research questions

The following research questions will be answered in order to address the aforementioned study objectives:

- i. What is the extent to which the functions as well as processes and procedures in libraries have changed in view of the current information age?
- ii. What are the competencies and skills of librarians in their changing roles?
- iii. What are the effects of technology on the roles of librarians?
- iv. What are the challenges faced by the librarians in their new roles?
- v. What measures can be put in place to help librarians overcome these challenges?

Table 1 summarizes the study's objectives and research questions as well as the possible sources of data.

**Table 1: Research questions, objectives and possible sources of data**

Research question	Objective	Possible source of data
1. What is the extent to which the functions as well as processes and procedures in libraries have changed in view of the current information age?	1. To find out the extent to which the functions as well as processes and procedures in libraries have changed in view of the current information age.	1. Questionnaire 2. Personal interviews 3. Document study
2. What are the competencies and skills of librarians in their changing roles?	2. To examine the competencies and skills of librarians in the current information age.	1. Questionnaire 2. Personal interviews 3. Document study
3. What are the effects of technology on the roles of librarians?	3. To determine the effects of technology on the roles of librarians.	1. Questionnaire 2. Personal interviews
4. What are the challenges faced by the librarians in their new roles?	4. To establish the challenges facing librarians in their new roles.	1. Questionnaire 2. Personal interviews
5. What measures can be put in place to help librarians overcome these challenges?	5. To recommend measures that will help librarians overcome their challenges.	1. Questionnaire 2. Personal interviews

#### **1.4 SIGNIFICANCE OF THE STUDY**

Many changes have affected the roles of librarians and these changes have been caused partly by technological advances and the re-organization of higher education whereby universities and middle level colleges are investing heavily in the provision of improved teaching and distance learning resources. This new information environment requires new skills in seeking, processing, and using this information. It is widely agreed that both professional and generic skills are essential to the library and information profession. As Elkin (2005:97) observes, “traditional skills need enhancing by IT, management and leadership skills allied to significant personal skills.” The library and information professionals therefore need to acquire and develop both sets of skills throughout their careers. These can then be applied in a wide range of environments, both traditional and non-traditional, enabling the individual to adapt and respond to changing circumstances (Brine, 2004:82). These are challenges that must be matched with technical and practical skills and the vision to implement these in a controlled and manageable fashion (Deegan & Tanner, 2002).

In view of the above, the significance of this study can be summarized as follows:

- The results and findings of this study will provide a basis of in dealing with the adoption of ICTs in the University of Nairobi and its constituent college libraries.
- With regard to the body of knowledge, the findings of this study will contribute to the existing knowledge about the changing roles of librarians. This will also form a basis for further research by academics interested in the same field and who wish contribute to the existing body of knowledge.
- To the decision makers, the findings of the study will be an eye opener in understanding the needs of librarians, hence the need to support them through training opportunities for them to be on par with the current information age.
- For the library directors, the findings of this study may help in filling the gap that has existed in the library due to the changes in technology which have somehow been ignored. This will provide a leeway to improving the working conditions of librarians by providing the necessary working tools.

## **1.5 SCOPE AND LIMITATIONS OF THE STUDY**

The conceptual scope of the study will be on functions, processes and procedures of academic librarians in respect to the adoption of ICTs in service delivery. ICTs in this context means the use of internet and Vubis smart as an integrated library system, which has resulted in the use of OPAC, online classification schemes, use of social networks, and the use of search engines such as Yahoo and Google just to mention a few. The study will cover 13 academic libraries, namely the University of Nairobi and its constituent college libraries. The study will be limited to academic librarians of these libraries who are information professionals trained in library and information science and have engaged in library service, which is the organization and management of information needs. These libraries were chosen because they are automated. They give an overview of the changes from the traditional library system to the electronic installation of Vubis smart integrated library system in 2001, when the library staff received cataloguing training and started the conversion of the manual catalogue.

## **1.6 LITERATURE REVIEW**

This section provides a synopsis of topics covered in chapter two which deals with the literature review. The chapter reviews the works that have been done by other researchers in this particular area of study. The review includes published and unpublished articles, that were extracted from journals, books and internet sources. It also includes studies conducted in other geographical regions outside Kenya. The key issues covered in the literature review include:

- The information age
- The extent to which the functions as well as processes and procedures in libraries have changed in view of the current information age
- Effects of technology on the roles of librarians
- Competencies and skills of librarians in their changing roles
- Challenges faced by librarians in their new roles and, lastly
- Related studies.

The major issues in the related literature so far reviewed and in line with the study objectives include revolutionary changes in information processing, storage, dissemination and distribution.

This is evidenced by the move from print to digital information, from traditional classification to use of online classification schemes, card catalogues to web based OPACs, traditional circulation to remote login and on to the use of RFID machines and finally communication through social networks. In a nutshell, the use of ICTs has induced a paradigm shift in libraries which include the shift from traditional libraries to digital libraries and the use of Web 2.0 applications that are already having an impact on libraries and librarians. Studies conducted in other libraries have also established that librarians are professionally challenged. The full implementation of web technologies can be realized only when the library personnel are skilled and passionate to re-create the library's mission. As the technology world unfolds for libraries, librarians have to be IT-savvy to understand today's readers. Librarians should equip themselves with IT related skills and also train in library web services and expose themselves to the latest technology and constant learning in the long term. This calls for a combination of skills, which include professional competencies, personal competencies and generic skills to work efficiently in this information age. A detailed literature review is covered in chapter two.

### **1.6.1 Conceptual framework**

A conceptual framework shows how various key concepts of the study are interrelated. Today's academic library is a paradigm in crisis because the significant developments in technology have been a challenge to the academic librarians, forcing them to understand and capitalize on the importance of ICTs despite those challenges. Libraries are advancing away from traditional library patterns to innovative applications of electronic technologies. This is as a result of information communications technology (ICTs). All these changes are dependent on professional competencies and skills that the librarians have. The main concepts that will be the focus of this study are: information age, libraries, librarians and changing roles. A detailed discourse on conceptual framework will be covered in chapter two.

Basically the changing roles of academic librarians may be an extension of their existing roles and brand new roles. But greater emphasis for this study was laid on the change from the traditional roles of a librarian to electronic based roles. This change, as has been mentioned, has been made possible through utilization of new technologies for the enhancement of information

access. However this study will be theoretically based on the five laws of the web as inspired by Bjerneborn (2004), which addresses the ICT aspects. The theory of the web states that:

- Web resources are for use
- Every user is his/her web resource
- Every Web resource is its user
- Saves the time of the user
- The web is a growing organism.

## **1.7 RESEARCH METHODOLOGY**

A description of the research methodology adopted for this study includes such issues as research paradigm, research method, area of study, target population, data sources, data collection methods and instruments, data analysis and presentation.

The study employed a qualitative and quantitative approach. This study was descriptive in nature, and a survey method was adopted. The area of study was the University of Nairobi and its constituent college libraries. The study targeted a total number of 124 trained library workers who included the library director and three deputy library directors. Purposive sampling was used. The researcher collected data from both the primary and secondary sources. Primary data was gathered directly from the librarians working in the library through questionnaires and personal interviews, while secondary data was gathered through documentary sources.

Questionnaires and personal interviews were used to obtain information for the study. The researcher used a detailed interview schedule of unstructured questions to obtain data from the respondents for personal interviews. A pilot study was conducted to measure reliability. A detailed description of the approaches used to conduct the study is covered in chapter three.

## 1.8 DEFINITION OF KEY TERMS

Due to misunderstanding in human communication which results from people bringing different meanings to the words they use in speaking and writing, effective researcher seek to avoid this difficulty by clearly explaining the meaning they assign to key terms in their investigations (Master papers, 2013). Some terms used in this study have been defined below:

**Electronic Library:** This is a library that provides access to its own collection as well as to arrange other materials from outside the library (Keenan, 1996:146); such access is usually provided electronically through bibliographic databases and networks. In this study, major library activities for instance, cataloguing, classification and Online Public Access Catalogue, circulation services have shifted from traditional to electronic.

**Information age:** Is the modern age regarded as a time in which information has become a commodity that is quickly and widely disseminated and easily available especially through the use of computer technology (Merriam Webster online dictionary, 2010).

**Internet:** Is a network of many computer networks and connects computers all over the world (Keenan, 1996:147). In this study, it was used for everyday tasks including library processes.

**Librarian:** Is an information professional trained in library and information science, and is engaged in library service, which is the organization and management of information needs (*Online Dictionary of Library and Information Science, 2005:8*). In this study, the librarian forms the basis of this study.

**Procedure:** Description of how an activity is to be performed. It includes methods to be used, equipment to be used and the sequence of operations (American Library Association, 2000:30). In this study, procedures are used to describe how library processes are carried out.

**Process:** A set of interrelated activities which transforms inputs into outputs (*Glossary of Library and Information Science, 2000:30*). In the library, processes include activities like

cataloguing, classification, indexing and abstracting etc, In this study, process was used to indicate how functions relate to each other.

**Professional competencies:** The capability to perform the duties of one's profession generally, or to perform a particular professional task with skill of an acceptable quality (American Library Association, 2000:32). In this study, it was used to describe the capabilities of a librarian.

**Skill:** Is an ability that has been acquired by training (American Library Association, 2000:39). In this study, it is used to express the abilities expected of a librarian.

## 1.9 ETHICAL CONSIDERATIONS

According to Amin (2005:28), ethics refers to well based standards of rights and wrongs that prescribe what humans ought to do, usually in terms of rights, obligations, benefits to society, fairness, or specific virtues. This means that there is need for the researcher to use professional and ethical standards to plan, collect and process data. Based on these explanations, the authority to conduct the study was obtained from the University of Nairobi Main Campus Library. Direct consent was also obtained from the respondents before collecting information (Kumar, 2005). According to Kumar (2005), it is unethical to collect information without the knowledge of participants and their expressed willingness and informed consent and that's why they were briefed about the study beforehand. Informed consent implies that the researcher will make participants adequately aware of the type of information the researcher wants from them, why the information is being sought, what purpose it will be put to, how they are expected to participate in the study and how it will directly or indirectly affect them (Kumar, 2005).

It is important that the consent be voluntary and without pressure of any kind (Schinke and Gilchrist, 1993). Therefore each respondent chose whether or not to participate in the research and no respondent was forced, deceived or threatened or subjected to any form of coercion whatsoever. It was purely voluntary. Refusal to take part would not attract any penalty. Confidentiality was also maintained by not sharing information about a respondent with others other than for research purposes since this is unethical (Kumar, 2005). The respondents will

remained anonymous as personal identification was not required when completing the questionnaire.

According to the UNISA policy on research ethics (Unisa, 2009), the researcher carried out the study in strict accordance with the approved proposal and the ethics policy of UNISA. The researcher shall maintain the confidentiality of all data collected from or about research participants, and maintain security procedures for the protection of privacy. On that basis, the researcher has already completed the ethical clearance form declaring the true accurate reflection of the methodological, technical, and ethical implications of the proposed study. The researcher shall work in close collaboration with the study promoter and shall notify him in writing immediately if any change to the study is proposed.

## **1.10 ORGANISATION OF THE DISSERTATION**

This study which is descriptive in nature is intended to identify the changing roles of academic librarians at the University of Nairobi Medical School Library in the current information age.

The dissertation is divided into six chapters as follows:

Chapter 1: Introduction and background of the study. This chapter consists of the statement of the problem, research purpose, research objectives, and research questions, significance of the study, and scope and limitations of the study.

Chapter 2: Literature review. The chapter covers the information age, extent to which the functions as well as processes and procedures in libraries have changed in view of the current information age, competencies and skills of librarians and their changing roles, effects of technology on the roles of librarians, challenges facing librarians in their new roles and related studies.

Chapter 3: Chapter three provides an overview of the research methodology which consists of research paradigm, research method, and area of study, target population, data sources, and data collection methods and instruments of data collection.

Chapter 4: Chapter four is a presentation of the findings of the extent to which the functions as well as processes and procedures in libraries have changed in view of the current information age, competencies and skills of librarians and their changing roles,

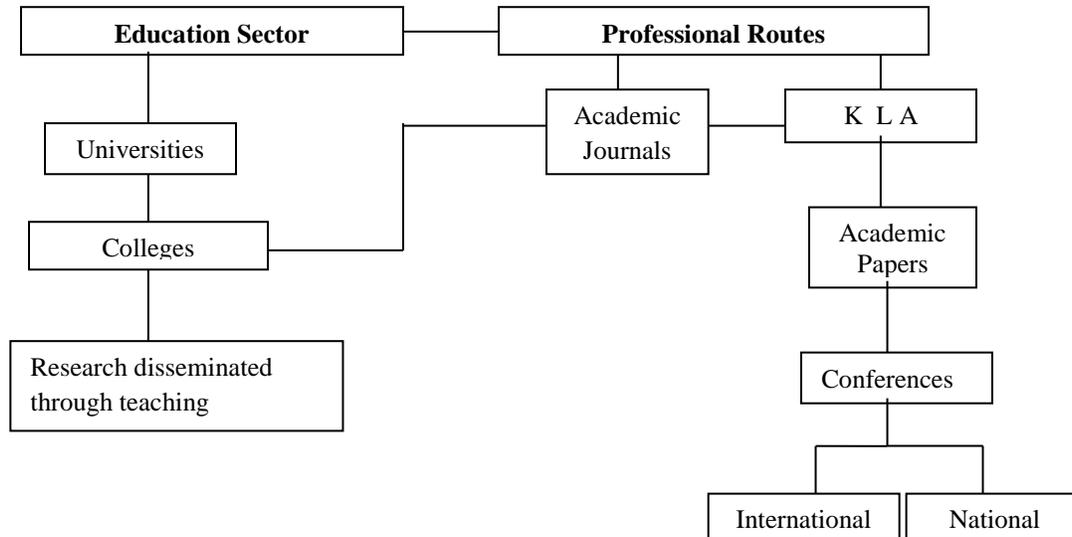
effects of technology on the roles of librarians, challenges facing librarians in their new roles and measures to be put in place to overcome these challenges.

Chapter 5: This chapter presents discussion of the findings on the extent to which the functions as well as processes and procedures in libraries have changed in view of the current information age, competencies and skills of librarians and their changing roles, effects of technology on the roles of librarians, challenges facing librarians in their new roles and measures to be put in place to overcome these challenges.

Chapter 6: This chapter provides a summary, conclusions and recommendations with regard to the extent to which the functions as well as the processes and procedures in libraries have changed in view of the current information age, competencies and skills of librarians and their changing roles, effects of technology on the roles of librarians, challenges facing librarians in their new roles and measures to be put in place to overcome these challenges.

### **1.11 DISSEMINATION OF RESEARCH FINDINGS**

Unless the results of research are shared, it is unlikely that research-based practice will advance further (Haines and Donald, 2002). The researcher will disseminate research findings through teaching in institutions offering library and information science since the application of ICTs in libraries forms part of the library and information science curriculum, publishing in academic journals and, in addition, presenting papers at both national and international conferences. Lastly, the researcher will submit the dissertation to be included in the UNISA library's e-repository.



**Figure 1: Dissemination of research findings**

## 1.12 SUMMARY OF THE CHAPTER

This chapter introduced the study as well as provided the background information to the entire study. Basically it describes how the roles of academic librarians have changed as a result of the changing technologies. The problem statement addresses the new role acquired by the librarians and what skills librarians need to have to be in touch with those emerging technologies to stay on top of the game. Other sections cover the purpose of the study, research objectives, research questions, justification of the study, scope and limitations of the study, significance of the study, literature review approaches, and organization of the thesis and dissemination of the research findings.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 INTRODUCTION**

According to Amin (2006:138), and Mugenda and Mugenda (2003:29), a literature review involves the location, reading and evaluating of reports of research as well as reports of observation, discussion and opinions that are related to the individual's planned research project. It also involves the systematic identification, location and analysis of documents containing information related to the research problem. Best and Kahn (1998:39) view review of literature as a "summary of the writings of recognized authorities and previous research that provide evidence that the researcher is familiar with what is already known and what is still unknown and untested". For Compte and Preissle (1993:153) "literature review can be conceived as an argument, a debate between the investigator and the audience, in which statements or propositions first are made by the researcher in the form of assertions that a particular problem is interesting, worth investigating by means of specific methods, and amenable to interpretation by the theories suggested by the author".

In view of these conceptions, a review of literature requires time and effort to identify, locate and analyse existing documents and information on the subject with the objective of revealing contributions, weaknesses and gaps.

### **2.2 IMPORTANCE OF LITERATURE REVIEW**

A review of related literature is very important because it provides the needed support to the researcher's rationale for undertaking research in a certain area (Strauss and Corbin, 1990).

The main purpose of the literature review is to determine what has been done already related to the research problem being studied (Mugenda and Mugenda, 2003). This helps the researcher to avoid unnecessary and unintentional duplication, form the framework within which the research findings are to be interpreted and demonstrate his or her familiarity with the existing body of knowledge. This increases the readers' confidence in the researchers' professional ability (Mugenda and Mugenda, 2003). The literature review reveals what strategies, procedures and

measuring instruments have been found useful in investigating the problem in question. This information helps the researcher to avoid mistakes that have been made by other researchers and also helps one to benefit from other researchers' experiences. This information may also help to clarify how to use certain procedures which one may only have learned in theory (Mugenda and Mugenda, 2003).

Amin (2006:139) asserts that review of literature provides ideas, theories, explanations, hypotheses or methods of research valuable in formulating and studying the problem. It also identifies what the researcher takes to be key issues, crucial questions and the obvious gaps in the current state of knowledge. It forms the foundation upon which all future works in this area will be built. It shows that the researcher is aware of the available existing work already researched on his/her area of interest from the perspective of methods used and to find out problems which remain unsolved. Review of literature enables a researcher to know the means of getting to the frontier of knowledge in the field of research.

### **2.2.1 Sources of literature review**

Sources of literature can be classified into two broad categories, namely primary and secondary. The researcher reviewed both primary and secondary sources of literature. A primary source is one which is a direct description of any occurrence by an individual who actually observed or witnessed the occurrence, while secondary sources include any publication written by an author who was not a direct observer or participant in the events described (Strauss and Corbin, 1990). They included published and unpublished articles which were extracted from journals, research papers, books and internet sources. It also included studies conducted in other geographical regions outside Kenya. The key issues covered in this literature review include introduction, theoretical foundation, the information age, effects of information technology on library operations, library functions, processes and procedures in the information age, librarians' competencies and skills, challenges faced by librarians in the information age and related studies.

### 2.3 THEORETICAL FOUNDATION

Basically the changing roles of academic librarians may be an extension of their existing roles or brand new roles. But greater emphasis for this study was laid on the change from the traditional roles of a librarian to electronic based roles. This change, as has been mentioned, has been made possible through the utilization of new technologies for the enhancement of information access. The basic theories of library science continue to directly impact the development of the library and science discipline and the service of all libraries.

The five laws of library science are some of the most influential concepts in the field of librarianship. Since they were published in 1931, these five laws have remained a centre piece of professional values. These five laws were not embraced by librarians in the early part of the 20<sup>th</sup> century. However, with new information and communication technology, Ranganathan's laws have been extended to the web. This is evidenced by the fact that the five laws are now re-used in many different contexts since 1992, the 100<sup>th</sup> anniversary of Ranganathan's birth (Noruzi, 2004). This study has been informed by the 5<sup>th</sup> law of Ranganathan and modified by other authors as spelt below.

The 5<sup>th</sup> law of Ranganathan, which states that the library is a growing organism, tells us about the vital and lasting characteristics of the library as an institution and enjoins the need for a constant adjustment of our outlook in dealing with it. Libraries grow and change, and will always do so. Collections increase and change, technology changes and budgets change. Change comes along with growth and, in order to be healthy, that change and growth requires flexibility in the management of the collections, in the use of space, in the recruitment, retention and development of staff, and the nature of our programmes, not forgetting the new technologies. This law informs the study that librarians also need to grow and change especially with this era of change brought about by the introduction of informational technologies.

Several authors have presented different principles and laws as observed by Noruzi (2005) in his paper. For instance, *Five new laws of librarianship* by Michael Gorman (2005); *Principles of distance education* by Sanjaya Mishra (1998); *Five laws of the software* by Mentor Cana (2003);

*Five laws of children's librarianship* by Virginia A. Walter (2004); *Five laws of web connectivity* by Lennart Bjorneborn (2004); and *Five laws of diversity/affirmative action* by Tracie D. Hall (2004). However, Gorman's laws are most famous and applicable in the context of today's library and its likely future, and also provide a strong foundation for the changing roles of academic librarians. Also, there are Bjorneborn's laws on web connectivity. Gorman and Crawford (2006) believed that Ranganathan's laws are applicable to the future issues and challenges that librarians will face. Middleton (2006), however, observed that Gorman's laws are not a revision of Ranganathan's laws, but another completely separate set, from the point of view of a librarian practicing in a technological society.

Ranganathan's fifth law was modified by Gorman (1995) to read, 'Honour the past and create the future' which is the implication that there is need to balance between the past and present with the need to embrace new technologies; however, it should be in a selective way based upon the extent to which these technologies will enhance the library services and also respect the accomplishments of predecessors in the field of information science, while embracing new developments in the field of librarians. This law informs the study that libraries are evolving fast from purely print materials to electronic and digital formats. As technology changes, librarians need to learn new skills on how to navigate the modern databases and electronic resources. Information literacy techniques are also changing and academic librarians need to use computer aided instruction to train users.

Ranganathan's fifth law was further modified by Bjorneborn (2004) to address the ICT aspects. This law states that the web is a growing organism. This law has many important implications for the study. The web reflects changes in our world and will continue to grow as we move along in life and contribute to its riches. We need to plan and build with the expectation that the web and its users will grow and change over time. The web presents an interesting dilemma for librarians. They have to weed through multiple websites to establish annotated lists of links that patrons can feel confident using. Librarians are also charged with the responsibility of indexing and cataloguing the resources found on the web. This law, as Ranganathan's and Gorman's, informs the study and librarians about the vital changes and growth of the collection which

requires flexibility in management. The web collection increases and changes just like print. Information technologies change and people will change. So this law recognizes that growth will undoubtedly occur and must be planned for systematically.

## **2.4 THE INFORMATION AGE**

‘Information age’, ‘information society’, ‘new economy’ and ‘knowledge economy’ are terms that refer to post-industrial society rich in information and communication technologies. Many believe that the development of computers and the internet are as significant a step as the mechanization which led to the industrial revolution, and that the new millennium will have just as significant an impact upon every aspect of society (Owen, 1997).

In the late 20<sup>th</sup> century saw rapid growth in information and communication technology. Computers went from being locked away mainframes to personal desktop machines available to all. Computers and their users went from isolation to being able to communicate with one another. If knowledge is power, now we are all empowered. As a result, the significance and dignity of the individual were restored and paradise regained (Owen, 1997).

### **2.4.1 Evolution of the information age**

In the beginning, human society consisted of individuals, families, and small groups. There was a high degree of self-efficiency, and everyone had their own particular talents. Some were better at hunting, some at cultivating the land, others at making implements. In time, larger groups formed to benefit from specialization. Members could focus on what they did best, trading their output with others. The net result was more and better output for all. In time, small, local groups joined to form larger, more organized groups-villages, tribes and nations (Carly, 1999).

### **2.4.2 The invention of machines**

Due to the invention of machines, there was mass production of goods. People moved to newly formed industrial towns to be near the machines which were their livelihood. Far from offering a better life, many lived in tiny houses, working long hours in unpleasant and often dangerous

condition - the 'dark satanic mills'. Relatively few entrepreneurs (factory owners) prospered. Most 'ordinary' people just survived and paradise was lost (Carly, 1999).

### **2.4.3 Corporate culture**

With the industrial age came the birth of the corporation. Wages were paid at fixed rates and workers were encouraged to do just enough and no more. Workers were discouraged from thinking, there was rigid hierarchical structure, bureaucracy prevailed and management was non-productive to effect control. There was loss of personal dignity and workers had nothing to lose except their chains Owen (2010).

## **2.5 EFFECTS OF INFORMATION TECHNOLOGY ON LIBRARY OPERATIONS**

According to Obegi and Nyamboga (2011), the library and information service profession is one of the most challenging professions in the knowledge society. Librarians face complex challenges posed by recent trends in information and communication technology. The role of the library professional, especially in schools, colleges and universities, has become more dynamic and challenging in the modern world. The application of ICT technologies has broadened the walls of the libraries. The resources of the libraries have changed from physical to virtual objects and with the application of Web 2.0 tools, patrons can now catalogue the resources they use and share information by inviting others to view, comment, rate and give feedback (Obegi and Nyamboga, 2011). Libraries and library users are struggling to acquire skills to effectively utilize Web 2.0 tools for creating online catalogues, social bookmarking, collaborating and sharing content. Besides, Web 2.0 is now demand driven in libraries and not technology driven.

### **2.5.1 History of automation in libraries**

The *International Encyclopaedia of Information and Library Science* (1997) defines library automation as where a computer system is used to manage one or several of the library's key functions such as acquisitions, serial control, cataloguing, circulation and the Online Public Access Catalogue (OPAC).

Library automation development began in the 1930s when punch card equipment was implemented for use in library circulation and acquisitions. During the 1930s and 1940s, progress on computer systems was slow given the depression and World War II.

For many years, visionaries such as HG Wells and Vannevar Bush predicted that different types of libraries would develop to adapt to technological changes. They referred to these different types of libraries as the so called “computerized libraries”. According to these predictions, made during the 1940s, these so-called computerized libraries would eventually replace conventional libraries. At the beginning of the new millennium, the field of library and information technology is well on the way to establishing these “computerized” libraries (Arms, 2000).

According to Arms (2000:8-10), the following technological developments contributed to the realization of this vision:

- The development of the “first operational computer”, described as the “first operational system for the mechanized retrieval of information”, was developed at the library school of the Case Western Reserve University in the 1950s.
- Technologies, developed in the early 1960s, led to large-scale office automation. Libraries recognized the potential usefulness of these technologies, which included reproduction and computer technologies. It was evident that these technologies could be used to automate certain procedures and processes in the technical services departments of libraries.
- The development, during the 1970s, of APRANET (the first version of the internet) by the United States Defence Department. The 1970s also saw the start of Project Gutenberg whereby old manuscripts were converted to ASCII text. This was the first development toward digitization as we know it today.
- The start of successful use, during the 1980s, by the Library of Congress of computer technologies to print multiple copies of cataloguing records on cataloguing cards that were distributed to libraries for inclusion in their own card catalogues.
- The distribution, in the mid-1980s, by the Library of Congress of cataloguing records (in MARC format) on magnetic tape to libraries where the records were loaded onto

computer mainframe systems. This development was followed by database vendors making full-text databases available on magnetic tape, distributing these to libraries and then loading them onto mainframes. The library systems that were run on these mainframe systems were not designed for use by end-users and required trained staff to retrieve information.

- Following on the above, a shift in focus to development of library systems that could be used by end-users. Many library card catalogues were replaced with OPACS, and bibliographic information sources on CD-ROM were added to library collections.
- The availability of desktop computers in the early 1980s, the first phase in making computer technology available to the general public.
- A shift in the focus of technological development, during the late 1980s, to digital technologies. Examples of such technologies include multimedia and networking technologies. These technologies influenced and improved the ways in which information was processed and managed. With the development of networks, the possibility of sharing information and information sources emerged.
- The intense interest in digital libraries during the 1990s was brought about by the expansion of the internet and the World Wide Web.

### **2.5.2 Types of ICTS used in libraries**

According to Kindiri (2007) Information and Communication Technologies (ICTs) simply refer to technologies and tools that people use to share, distribute, gather information, and to communicate with one another, one on one, or in groups, through use of computers and interconnected computer networks. Kandiri (2007) further explains that they are mediums that utilize both telecommunications and computer technologies to transmit information. Hand held devices like mobile phones are also part of ICT.

According to Gakuu (2006:7), major organizational changes and new developments in institutions of higher learning are taking place at accelerated pace through the dynamic advances in global digital communication and sophisticated learning technologies. These changes, for instance, e-learning, have necessitated the general educational changes particularly in the use of

information and communication technology (ICT) in instructional delivery where learning instructions are given online.

According to Gakuu (2006), these ICTs can be grouped into three categories, namely:

- Information technology which uses computers which have become indispensable in modern societies to process data and save time and effort;
- Telecommunications technologies which include telephones (with fax) and the broadcasting of radio and television, often through satellites; and
- Networking technologies of which the best known is the internet, but which has extended to mobile phones, voice over IP telephony (VOIP), satellite communication, and other forms of communication that are still in their infancy.

#### **2.5.2.1 Use of mobile phone services**

Many libraries have embraced the use of mobile phones to offer services (West et al., 2006 as cited by Mbambo-Thata, 2010). For instance, the process of sending a text message from one mobile phone to another is now an interaction of the computing power of the handset with the computing infrastructure of the telecommunication process (Mbambo-Thata, 2010).

According to Dampsey, 2008, as cited by Mbambo-Thata, 2010, development in technology has now put pressure on the libraries to provide information materials that are specifically adapted to mobile learning requirements. Given that some institutions offer Open Distance Learning, where students learn away from campus, requires libraries to reach learners in ways familiar to them especially via mobile phones. This means that services must reach students where ever they may be located through the Short Message Service (SMS) to inform them about what is expected from them. An example is UNISA where students receive SMSs informing them about registration, examinations, assignments and other important information (Mbambo-Thata, 2010). However, for libraries which are required to go beyond SMS as a service, they need to utilize AirPac to customize their library website for small screens, which will make it possible for staff and students with the web-enabled mobile phones to search the library website, manage their patrons, request learning materials and search databases (Mbambo-Thata, 2010).

The impact of mobile phone service on internal operations is that librarians have to develop training materials, including a video, which should also be made available to the students to promote AirPac and also provide intensive marketing to inform students about the product (Mbambo-Thata, 2010).

According to a study conducted at Ball State University Library (BSUL) on mobile phone services as an aspect of monitoring and evaluation, however, a number of challenges were discovered which included:

- Device limitation: The small screens of most mobile phones made it difficult to view large images.
- Most devices had limited memory. This limited the amount of memory with which students had to work.
- The wireless connectivity on the phones was also very slow.
- The Ball State University Library site itself had large images that were difficult to download without Java on the mobile phones.

With the implementation of mobile phone services, there is a possibility that the existing workflows, staff allocations and resource distribution will be affected. Therefore, changes should constantly be monitored by librarians to note the impact of this new technology on internal services.

### **2.5.2.2 Use of computers in library operations**

According to an article in a standard newspaper dated 26<sup>th</sup> March 2013, technology is inevitable and we must embrace it if we are to be relevant in the modern business operation environment. Technology also improves effectiveness and efficiency at workplaces. The worker of the future should compete effectively with machines and prove they can do extremely well what machines cannot do. Besides, the office space and desk may not die soon because face-to face interaction with clients has an important role to play in delivery of results. Librarians need to talk and interact, and hold personal discussions with clients which can't always be done virtually.

According to Mbirizah and Chimuka, 2007, as cited by Mbambo-Thata, 2010, automation of library services has brought about convergence between acquisitions and cataloguing, bringing them together as bibliographic services. The traditional structure has been challenged by the fast created lateral connections as a result of technology. Automated service has also created horizontal connections between departments. This requires constant monitoring to enable institutions to respond and make changes to services where necessary (Mbambo-Thata, 2010).

### **2.5.2.3 The circulation services**

According to Kavulya (2005:14), the circulation module contains information concerning the circulation collection of the library as well as information on the library user. As the library circulates copies and not bibliographic entities, the item record, which contains information on every individual copy of a particular item, is essential to the circulation activity. In the olden days, notices were sent by hand mail to notify users of overdue items. Today, they can be generated automatically without any human intervention and support email notice capability. The circulation department now adds information such as circulation status of the item, loan period category, the borrower's identifier and the due date for items in circulation to the original item record. Besides, the circulation system offers telephone notifications. This feature helps to reduce their notice production costs by delivering overdue and hold pick-up notices by phone. The borrower file contains one machine readable record for every registered library user. The common data fields in these records include: the borrower's name, address and telephone number (s), date of registration, date of last circulation activity, the borrower's privilege number, e.g. graduate student or undergraduate student and the borrower's card number.

#### **(a) Self charging/discharging**

Self-check machines are very popular and widely used in many libraries as they eliminate queuing and allow patrons to check out books without a librarian's intervention. Date due slips are automatically printed. It also offers an automated circulation backup system which enables the librarian to continue to serve patrons during unforeseen circumstances such as power failure. The use of RFID reduces the amount of time required to perform circulation operations.

The use of RFID technology helps librarians eliminate valuable staff time spent scanning barcodes while checking out and checking in borrowed items. For the users, RFID speeds up the borrowing and returning procedures (Boss, 2003 as cited by Shahid, 2005).

**(b) External book return**

Libraries can now offer a distinct service to users such as the ability to return books when the library is closed. The user identifies himself/ herself and then puts the book(s) into the slot. Upon completing the return, the user will receive a receipt showing how many and which books have been returned (Boss, 2003, as cited by Shahid, 2005).

**(c) Renewals**

Renewal of an item refers to extending the deadline of the borrowed books in a limited period of time; however, it can be transacted only before the due date. In book renewals, users login to their library accounts using their credentials, i.e. user name and password. A list of all items in a user's custody will appear including details of when they are due. The user clicks on renew icon to renew the item (s). However renewal will not be accepted if the item is overdue and accruing fines, the item is on hold for someone else, a recall has been made on that particular item or the user has reached the maximum renewing limit, that's twice (Kavulya, 2005).

**(d) Websites**

Merriam Webster online dictionary (2010), defines a website as a group of World Wide Web pages usually containing hyperlinks to each other and made available online by an individual, company, educational institution, government or organization. In the electronic environment and more specifically in libraries, websites are used to promote library use. Websites provide information about the library and its activities. These activities include the library's opening hours, rules and regulations, departments, library collections, budget, staff, map and directions, contacts and frequently asked questions (FAQ). The website also provides online access to local information sources and acts as a gateway to networked information resources like CD-ROMS, intranet and intranet. It also integrates push-based services (Otieno, 2011)

**(e) Blogs, chats and Facebook**

The paradigm shift from Web 1.0 to 2.0 is offering new challenges for librarians on how to capture the attention of users who are engaged in social media activities (Bhatti and Khan, 2011). Social media helps in reaching out to our communities and providing them with information that they need in a very accessible way.

According to Abungu (2011), developments in technological innovations have led to shifts in ways higher institutions offer their education. New course models have emerged in the last few decades. Distance, online and M-learning are terms that have become common in the field. These models pose challenges to traditional modes of providing access to resource by libraries and librarians. To provide optimal 24/7 service delivery, libraries are creating virtual communities through social software such as blogs, RSS feeds, instant messaging (IM), Wikis, podcasts, Facebook, Skype, and Web conferencing. The whole business of libraries is about connecting people with information and this is what social media is really all about (Bhatt and Khan, 2011).

Obachi and Kachero (2011) maintain that institutions offering library and information science have had to review their curriculum and re-brand the courses to encompass emergent areas in the profession. Libraries have now to collaborate not only with faculty to plan IT skills for learners but also with IT personnel and users to develop strategies to improve service delivery. This kind of collaboration is made interactive and more exciting by the use of Web 2.0 tools such as Facebook, Twitter, IM, Wikis, blogs only to mention a few (Abungu,2011).

**(f) Email requests**

Email is the process of sending messages directly from one computer to another. The sender transmits the message over the telephone network to a central computer, which allocates disk storage to act as an electronic mail box for each user (Otieno, 2011). Email is probably the most popular feature of the internet. It is fast in that transmission is almost instantaneous and economical because no stamp, labour, or paper is required. It is efficient because once a message is prepared, it can be sent to thousands at the touch of a button. In other words it is an easy way

of sending messages and files. Access is also restricted by use of a password. Documents can be retrieved and stored to word processing and graphic packages. When conducting surveys, librarians use emails to send out questionnaires on an address book of possible users and ask them to complete and send the questionnaire back via email. The implication for this study is that librarians need to have basic internet skills in order to exchange messages between users who are connected to the internet (Otieno, 2011).

**(g) Interlibrary loan service**

According to Buchanan (2009), the role of the interlibrary loan librarian has been a moving target for many years. New ways to obtain documents have forced them to rethink their workflow and their jobs. The explosion of full text sources has pushed the interlibrary loan staff towards new roles (Buchanan, 2009). The Information Delivery Service (IDS) project, which is a New York resource sharing cooperative, has developed two new resolves that will change the face of interlibrary loan given that it works like OCLC direct request (Buchanan, 2009). The first one is that the interlibrary loan librarian now provides reference services, takes requests for information, locates the resources and helps patrons navigate complex discovery systems, reduces barriers and direct users to full text as opposed to the traditional one way of delivering print requests.

Secondly, as a result of systems becoming more interoperable and full text sources becoming more prevalent, interlibrary loan librarians are now required to integrate more and more tools into the scope of their searching and fulfilment (Buchanan, 2009).

**(h) Reference service**

Reference service refer to all activities that facilitate the efficient access of information by users in specific subject areas to accomplish teaching, learning or research activities and which target the library's own collection or information stored in other libraries or information systems (Kavulya, 2005).

Change has been continual and far-reaching in libraries since the late 1980s. The roles of reference librarians in academic libraries have reflected this change. Automation of information systems has been the driving force behind transformations both in the library environment and in reference service practices (Cardina and Wicks, 2004). Reference services have always been a key element in libraries (Bopp and Smith, 1995). They provide personalized guidance to library users in accessing appropriate information resources to meet their needs.

How does the reference librarian help a user to find this information? Traditionally, the reference librarian conducts a reference interview with the user to make sure that the information need is understood. The reference librarian then finds out the information by identifying the relevant sources (Bopp and Smith, 1995). He/she finds the answer to the question, and then supplies the answer to the user who is satisfied or not satisfied.

Today, with the technological developments particularly in the field of electronics and computerization, information retrieval has been revolutionized. Reference service has grown from face-to-face reference desk interviews since the 1990s to e-mail, web-based instruction, and in-depth consultations (Cardina and Wicks, 2004). Electronic facilities have provided the opportunity for users to conduct more reference work themselves instead of using the reference librarian as an intermediary. This poses new challenges with regard to training users in order to enable them to conduct successful information searches such as online databases, electronic journals and the internet (Bopp and Smith, 1995).

The function of the reference library and librarian have now changed given the amount and diversity of information available on the internet and databases constantly increasing, the lack of organization on the web, the demand of users who want quick and clear answers in response to an information need and sometimes lack of skills among users to find information (Bryson, 1997).

Reference service to remote users of the library is another changing role of academic reference librarians. While telephone and e-mail are commonly used, new software and technologies such

as paging, Instant Messaging, and Internet Chat are used to provide real-time reference services to remote users of the library (Cardina and Wicks, 2004).

The implication for this study is that the reference librarian has to play a changing role. On one hand he/she conducts information retrieval for certain users, while on the other hand he/she fulfils the role of user trainer in electronics reference work. As part of the reference service, there are other additional services offered by the reference librarian as outlined below:

**(i) Web 2.0 Technologies**

Web 2.0 technologies is a term used that describes the changing trends in the use of World Wide Web technology and Web design that aim to enhance creativity, secure information sharing, increase collaboration, and improve the functionality of the Web (Stern,2012). These have led to the development and evolution of Web based communities and hosted services, such as social networking sites (i.e. face book, MySpace), video sharing sites ( i.e You tube), wikis, blogs etc. Web 2.0 website allows users to do more than just retrieve information.

**(j) Library guides**

Library guides are research tools which give users an overview of the resources that subject experts find to be the best on a given topic. A user can browse A-Z or by topic. Once a user finds a guide pertaining to her/his subject, they are just clicks away from quality sources for their research (Coyle, 2007). Course guides are also developed specifically to help users get started with research and maximize their educational experience. In this case you will find librarian created lists of top resources and tips to get your project started.

**(k) “Ask the librarian” services**

The internet is a wonderful ready reference tool since it provides access to a variety of directories, dictionaries, encyclopaedias and websites of a wide variety of organizations and businesses. It also provides the means of offering a ready reference service based on e-mail to library users by means of “ask a librarian or aska” services (Dewey, 2001:15).

Such services are a very common feature on library web pages; an “aska” service allows visitors to the web page to send their reference question(s) to a specific email address. An information librarian to whom this duty has been assigned then answers the questions.

A team of information librarians can also share the work. “Aska” services are an example of increased responsibility for information librarians as a result of the availability of electronic information and communication resources. Such a service can be important in enhancing the services to users. However, it definitely has quite a big impact on staffing and the allocation of resources. One of the most common problems encountered by librarians when providing such a service is incomplete information from and about the requestor. Since it can be very time consuming to conduct a reference interview by email, it’s important to supply a form on the web page which requestors must complete. Such a form will guide the user to provide as much relevant information as possible and will facilitate a quick answer from the information librarian.

**(l) Research questions and subject information services**

Another major reference service is the provision of research assistance to library users. This service requires more time and effort from the reference librarian because the questions are much more complex and not as well defined (Kavulya, 2005). They also tend to be focused on specific themes with specific subject areas. For this reason, academic libraries make the distinction between general and subject information services and allocate responsibility to serve users within specific subject areas to different librarians (Kavulya, 2005). This means that librarians must specialize in information provision within a given subject area for them to conduct extended search covering a variety of information sources, including online databases and the internet. The implication for this study is that the reference librarians have always had difficulty remembering most of the sources in the print environment and now the problem has been magnified with the addition of electronic resources, many of which employ different search strategies and interfaces. Moreover, the print sources are still there and need to be utilized in conjunction with the electronic resources. In addition, information librarians must be knowledgeable about how data files are organized and technical matters such as what users need to do to access library resources from their homes and offices.

**(m) Selective dissemination of information (SDI)**

According to Odongo (2011) selective dissemination of information is a proactive form of continuing research assistance. It is a customized service that forms an important part of the information services offered in academic and special libraries. The objective of SDI service is to keep researchers aware of new developments as reflected in the literature of their field of interest and is sometimes referred to as a current awareness service. In order to offer such a service, the librarian consults users and compiles a profile of their needs and interests. The librarian then uses the profile to direct relevant information to the users on an ongoing basis.

Access to electronic information services makes it possible to offer this kind of service in a very effective manner. The librarian can access the appropriate online databases and do a search that matches the user's information needs profile and requests. The same search can also be repeated automatically each time the database is updated. The search results can be e-mailed either to the librarian or directly to the user.

**(n) Alert services for SDI**

SDI may be defined as a service provided by a library or other information agency whereby its users are periodically notified of new publications, report literature, or other sources of information in subjects in which they have specified an interest (Schultz, 2006).

Selective dissemination of information (SDI) services regularly alert users to new information on their chosen topics. This type of service can increase a user's ability to keep current and have a positive impact on efficiency and productivity (Schultz, 2006). While SDI is often equated with automated searching, it can be provided in a variety of ways, both manually and electronically.

**(o) User education**

Dewey (2001:220) defines user education as the training of library users to improve their skills in collecting and organizing information independently. It can be sometimes used synonymously with bibliographic instruction, user training, library instruction, library education, user guide and information user training.

A user education programme may be conducted in a number of ways, for instance on a one-to-one basis or in groups. A user education programme furthermore constitutes a very important component of an integration service in all types of libraries.

Library users are fast becoming end-users of full text data bases. User education librarians now have the added responsibility of developing guideline for using these data bases. What is the main objective of training users? The main objective is to teach users the basic concepts that will help them to find what they need. Users must be taught to look at more than just the first screen of a database. Users must find out what subjects are covered in the database, because it is not always obvious from the name of the database or its opening screen. Even users with good computer skills still need help with choosing a database, the specifics of various systems and the synthesis of results. Librarians find themselves increasingly having to cope with demands to instruct users at all skills levels.

**(p) Podcasts**

Podcasts also serve as user guides, supplemental materials and can also be used for staff development and training. A podcast is basically just an audio or a video file. Podcasts are made because users like them and are comfortable with the technology. Information comes to the user; they do not have to go get it. It is of great value to users with learning disabilities. Users can review materials as many times as they want, at their own pace (Stern, 2012). What distinguishes a podcast from other types of audio on the internet is that “a podcaster” can solicit subscriptions from listeners so that when new podcasts are released, they are automatically delivered or fed to subscriber’s computer or mobile device.

**(q) Skype and satellite broadcasting**

Skype is used in libraries to hold teleconference meetings with business associates. The library’s Skype enabled terminals include a live camera and microphone to make face to face chatting simple. Although Skype is a commercial product, its free version is being used with increasing frequency among librarians, teachers and schools interested in global education projects (Lawson, 2011). For example, skype is being used to facilitate language exchange. Users in

different parts of the world are paired off; each is a native speaker of the language that the other wishes to learn. In conversations over skype, they alternate between two languages (Lawson, 2011).

Satelite and skype technology have changed TV news, making accessible people, places otherwise in accessible to journalism. It is incredibly rare to watch television a still photo of a reporter or witness while we listen to their cracking phone voice. But the spread of these methods has created a peculiarity of viewing grammar (Lawson, 2011).

## **2.6 LIBRARY FUNCTIONS, PROCESSES AND PROCEDURES IN THE INFORMATION AGE**

Libraries are organized collections of books, journals, and other sources of recorded information. A library plays different roles for different people. To some, it is a place to read books for relaxation and newspapers to keep up to date; to others it is a place to do research; to others still, it is a place for seeking information in response to a particular need. Libraries and librarians play an important role in providing access to information, organizing it and helping users to find information they need. By means of the public catalogue the traditional library fulfils functions such as acquisitions, serials control, cataloguing, processing and spine marking, circulation and information services. A procedure is a description of how an activity is to be performed. It includes methods to be used, equipment to be used and sequence of operations (American Library Association, 2000:30). A process is a set of interrelated activities which transforms inputs into outputs (Glossary of Library and Information Science, 2000:30). In the library, processes will include the following activities cataloguing, classification, indexing, and abstracting.

### **2.6.1 Traditional roles of a librarian**

Traditionally, librarians select, search, collect, organize, maintain and preserve the resources.

Basically, librarians carry out their services through the so called 4S Scheme (Brine, 2004:84).

These include:

- Selection: selecting and acquiring available information in the market place, based on user needs and quality standards, within the available budget.

- Storage: maintaining the availability of publications through long term storage and preservation.
- Service: making the information resources available through facilities and procedures for on-site consultation, lending and document delivery.
- Support: giving the user guidance and assistance, including the development and maintenance of support systems such as catalogues, etc.

### **2.6.2 Current library functions, processes and procedures**

Librarians who have worked in libraries since the 1990s have seen vast changes in their working environments and in what is expected of them professionally. Obvious changes in technology have occurred with the emergence and rapid growth of electronic resources such as e-mail, Online Public Access Catalogue (OPAC), and electronic databases (Cardina and Wicks, 2004).

Today, the rapid development in information technology has brought revolutionary changes in information processing, storage, dissemination and distribution resulting in great changes in all aspects of society (Materska, 2006). The information communications technologies (ICTs) have induced paradigm shifts in libraries which include the shift from traditional libraries to digital libraries, print on paper to digital information, use of online classification schemes, card catalogues to web based OPACs. In addition, circulation services have changed from traditional charging and discharging to remote login, to use of RFID machines, and librarians and users now communicate through social networks. The use of Web 2.0 technologies and applications constitute a meaningful and substantive change in the history of libraries and librarians. According to Godden (1991:103) as cited by Dewey (2001), the key to a smoothly functioning library, particularly an electronic or automated library, is effective communication and sensible working relationships among all library functions or departments as explained below:

**(a) The online integrated library system**

According to Dewey (2001), in the library environment an online integrated library system can be defined as a computer-based library information system through which all the library functions share one common data base. On the database of an integrated library system the same bibliographic computer record is used throughout the different stages of processing a library item.

Before computerization, library tasks were performed manually and independently from one another. Materials were ordered using ordering slips, books were catalogued manually, borrowing and returning of library items was also done manually and a manual card catalogue was used. Today with the evolution of the internet users are actively engaged with OPACs and online web-based portals. Users can now log into their library accounts to reserve or renew library items (Dewey, 2001).

Most integrated library systems have a modular design, e.g. they offer interrelated programmes for the automation of specific library functions. There are usually three basic application modules necessary for the implementations and operation of an integrated library system: the cataloguing module, circulation module and OPAC. Modules such as acquisitions, serials control and management information are often optional additions to the basic system which, if not implemented during the initial installation of the system, can be added at a later stage.

**(b) The acquisition module**

Acquisition, which includes the accounting function, basically involves all the tasks of ordering, claiming and receiving all the types of library materials. Libraries have been forced to re-strategise on their service provision in order to meet new trends. Many are going digital in their resource acquisition (Abungu, 2011). Ever since the acquisition feature was incorporated into the library system, it has contributed to savings of time and cost as well as labour. Most acquisition transactions such as ordering and payment can now be done electronically. It not only helps to reduce the amount of paper needed for purchase orders and invoices, but also helps to facilitate filing and organizing of forms electronically, another time saving feature. The acquisition department creates a pre-cataloguing record by means of which a particular item is ordered for

the library collection (Godden, 1991). Apart from the ISBN and the price of the item, this order record contains the most important bibliographic information by means of which the item can be identified: author(s), title(s) edition, publication information such as place of publication, publisher and date of publication. After the acquisitions department has received the item, an item record is created, which contains information on every individual copy of an item. Dewey (2001) describes the information content of the record as: an item identifier, such as a bar code number, a copy number, the item type, the circulation status of the item, a loan period category, the local call number, the normal location of the item, the borrower's identifier, due dates for items in circulation and the original price of the item

**(c) The cataloguing module**

Today computer-based cataloguing systems are among the most successful large scale applications for computers in libraries (Evans and Heft, 1994:25, as cited by Dewey, 2001). All integrated library systems support cataloguing as the basic application that permits the creation, updating and maintenance of the library's bibliographic database. Apart from the bibliographic description, the catalogue record contains access points and subject headings by means of which the library user can gain access to the item. The catalogue record also contains a classification number that indicates the location of the item in the library collection. The cataloguing department also adds information, e.g. item type and copy number, to the item record to identify every individual copy of the item for circulation purposes. When a library plans and implements a computer system, online cataloguing tends to be the first function to be computerised. The reason is that the bibliographic information recorded by the cataloguing department forms the basis on which several other library functions operate. Another reason for computerising the cataloguing function first is that co-operative use of a bibliographic network is regarded as a key to more efficient library cataloguing. In order to participate in such a network, the cataloguing records have to be created in MARC format. Machine-readable cataloguing (MARC) is essential for modern library systems because the MARC format makes the online manipulation and exchange of bibliographic data possible.

**(d) RDA for cataloguing**

Resource Description and Access (RDA) is the descriptive cataloguing standard that has replaced AACR2. RDA provides a comprehensive set of guidelines and instructions on resource description and access covering all types of content and media. RDA is a web based product, which will enable cataloguers to view different levels of completeness of the code, move between related instructions using hyperlinks, and integrate their own institutional policies (Coyle, 2007). RDA is better at catering for digital resources with multiple characteristics and will provide guidance on the creation of authority headings. RDA also facilitates the clustering of bibliographic records for different editions, and translations or formats of work and the more meaningful presentation of data to users (Coyle, 2007).

**(e) Interaction with other library functions**

The quality of the interaction between cataloguing and other library functions is crucial for efficient cataloguing procedures and for providing a quality service to library users. In an integrated library system the original cataloguing input is determined by the acquisitions function. The acquisition librarians create a pre-cataloguing record (order record). The status of the item is indicated as “on order.” After the item, which could be one or more copies of the same item, has been received, the status is changed to “in process”. Bar codes are added to each copy and the copies are linked to the record by scanning in the bar codes. (The bar codes make circulation possible). The item is sent to the cataloguing department where the cataloguing librarians create a comprehensive bibliographic record. Once the physical processing (covering, inserting data sheets, securing strips, labelling, etc), has been completed, the item is sent to the circulation department (Dewey, 2001:13).

The bibliographic information recorded by the cataloguing department in MARC format is also available immediately in the OPAC in International Standard Bibliographic Description (ISBD) format. In other words, the cataloguing process provides the information needed to render information service to the library user. By means of the item record information the user is able to determine the status of a particular item, e.g. whether the item is available in the collection or in circulation. When an item or copies thereof have to be removed from the data base because it

is missing or damaged, the cataloguing department usually has to amend the cataloguing record or completely remove the record in order to reflect the change in status of the item.

#### **(f) Research support**

Measuring, evaluating, managing and showcasing research within the institution has become an important function in most universities. To ensure the highest quality and quantity in research output, the university must endeavour to share research, promote research collaboration, showcase its expertise and allocate research resources wisely (Schultz and DeGroot, 2006). Some of the citation resources and bibliographic management tools for research support are mentioned below.

##### ○ **Citation resources**

- Scopus: Scopus is the largest abstract and citation database of peer-reviewed literature with smart tools to track, analyse and visualize research. Quick, easy and comprehensive, Scopus provides superior support of the literature research process.
- Web of science: Web of science databases allow you to conduct cited reference searching to track prior research and monitor current developments, see who is citing your work, measure the influence of colleague's work, and follow the path of today's hottest ideas. Navigate forward and backward through the journals and proceedings, literature, searching all disciplines and time spans to discover information with impact.

##### ○ **Bibliographic management tools**

- Refworks: In a world of e-research, there are more data sources available than ever before, which means researchers need highly efficient ways to manage vast amounts of information easily. Refworks is a powerful online search management, writing and collaboration tool designed to help researchers at all levels easily gather, organise, store and share all types of information and to instantly generate citations and bibliographies.

**(g) Online Public Access Catalogue (OPAC)**

Saffady (1999:219 as cited by Dewey, 2001) defines the Online Public Access Catalogue (OPAC) “as organized, machine readable collection of bibliographic records that represent a library’s holdings”. The library catalogue forms the base for most library activities such as acquisition, reference, interlibrary lending just to mention a few. Users of the catalogue appreciate how fast retrieval, search and printing are done in an automated environment. As for library staff, printing and filing of library cards are eliminated. In an integrated library system, the OPAC makes information services possible by means of information from the cataloguing and circulation departments. The bibliographic record prepared in MARC format in the cataloguing department is displayed in ISBD format in the OPAC. Apart from the bibliographic record, such information from the item record is also displayed in the OPAC. In this way, the user can see the location of the item and whether it is available or in circulation at a given moment. Besides, librarians have authorized passwords for security purposes. With passwords, they can update, edit, add or remove records from the database. The security also enables them to track records.

The library’s collection has changed, becoming more interactive and fully accessible. The library’s services have changed focusing more on the facilitation of information transfer and information literacy rather than providing controlled access to it (Maness, 2006). This is evidenced by the four conceptual underpinning to library 2.0 which comprise of user-centred, a multi-media experience, socially rich, and communally innovative. It also focuses on the definition or the term ‘collaborative’, and multi-media web-based library services and collections.

Library 2.0 is not about searching, but finding; not about access, but sharing. Abungu (2011) asserts that, library 2.0 recognizes that human beings do not seek and utilize information as individuals but as communities. Library 2.0 visualizes a different library service that makes information available wherever and whenever the users require it. The success of library 2.0

requires change across a wide range of systems, processes and attitudes. Based on library 2.0's principles, the library is everywhere, has no barriers and invites participation.

#### **(h) Current roles for librarians**

Today, in the digital age, librarians can no longer be simply information providers or the keepers of knowledge. The changes in technology using electronically stored and retrieved information has changed the way patrons and students access, retrieve and use information. Today, librarians' roles are a combination of IT-related roles and traditional roles (Obegi and Nyamboga, 2010).

According to Klobas (1999), in the electronic service context, librarians' roles will become more prominent as educators, information managers, information management consultants, and custodians of information, information providers and publishers, change agents and even as custodians of public library facilities, just to mention a few.

- As educators, librarians are charged with the responsibility of increasing awareness among their clients of information networks, their contents and potential use. They also assist clients who are new to electronic networks, and are unfamiliar with sources of information.
- As information managers, librarians have access to many information resources across many disciplines. They have the skills to build navigation tools for networked resources as well as published information in traditional library catalogues and national bibliographies.
- As information management consultants, librarians can network users to build and maintain personal information systems, which provide access to subset of networked information resources relevant to each user's work.
- As custodians of information, librarians are challenged in their role, as physical resources migrate into electronic form and demand for electronic delivery has become more common.
- As information providers, librarians can avail a wide range of publications and access in different formats, from remote login catalogues and indexes to provision of electronic and print copies.

- As change agents, library staff can lobby for network access for themselves and their users.
- As custodians of public library facilities, information professionals can provide workstations, network gateways, printers and software which may not be available to the public.

## **2.7 LIBRARIANS' COMPETENCIES AND SKILLS IN THE INFORMATION AGE**

Different organizations define “competencies” in somewhat different ways. Some define them more broadly, and use competencies synonymously with the knowledge, or skills or abilities a person needs to do the job. Others define competencies more narrowly in terms of measurable behaviours. Typically, competencies involve the ability and willingness to perform particular tasks and to transfer knowledge and skills from the performance of one type of work to others (Graham and Bennet, 1998).

Dessler (2008:155) defines competencies as demonstrable characteristics of the person that enable performance of a job. Job competencies are always observable and measurable behaviours comprising part of a job. Competencies as defined by Evaul (2007:146) are a combination of skills, knowledge and behaviour patterns vital to organizational success, personal achievement and career development. These competencies, however, are divided into three types. These include: professional competencies, personal competencies and generic skills. A skill as defined by Business Dictionary (2012) is an ability and capacity acquired through deliberate, systematic, and sustained effort to smoothly and adaptively carryout complex activities or job functions involving ideas (cognitive skills), things, (technical skills), and/or people ( interpersonal skills).

### **2.7.1 Essential workplace competencies for the 21<sup>st</sup> century**

According to Dunning (2004), competencies are the behaviourally defined characteristics which underpin effective and/or superior performance across a range of tasks, i.e. how the person should behave in order to achieve the objective of his/her role and of the organization. These

competencies and skills are important because they safeguard professional status (Dunning, 2004).

These workplace competencies facilitate the development of individuals who demonstrate high performance in the work place. Dunning (2004) describes these competencies as follows:

- **Self responsibility:** This portrays readiness and willingness to work. An employee demonstrates realistic optimism, energy and alertness and capacity to independently work towards goals. The employee should have the ability to take ownership by demonstrating personal accountability plus maximum and effective use of personal assets. When people achieve expertise in this competency, they hold themselves accountable for their performance. They are ready, willing and motivated to take responsibility for their performance.
- **Communication:** This includes listening carefully. An employee should have the ability to encourage others to express differing opinions, clarify and act on communication and finally incorporate corrective feedback. Effective information sharing also contributes to customized communications which show purpose, planning, and precision. It also gives both positive and corrective feedback, resolved issues notwithstanding. When this competency is achieved, people interact effectively with others, work in a team, listen and share information effectively and resolve conflicts.
- **Mindfulness:** Basically, this is knowledge of how to learn. An employee should have the ability to access and use relevant or new information, critique and evaluate information sources, integrate and transfer new information across situations and recognize the strengths and limitations of their thinking mode. Besides, they should have knowledge of how to apply thinking, meaning the ability to systematically solve problems and make informed decisions and consciously utilize different thinking modes.
- **Productivity:** All employees should be result focus, meaning that they prioritize, plan and organize time and tasks. They should be persistence in whatever they have to do for the achievement of better results. This involves completing work to a high standard and continually improving work processes and exceeding standards. Those who achieve this

expertise in this competency achieve exceptional results. They can be relied upon to get work done to a high standard.

- **Proactivity:** Employees should anticipate and adjust to change. This means that they should be able to look for patterns and trends from diverse perspectives and also adjust behaviour to accommodate change. Besides, they should set careers and life goals, use self-development and self-promotion to capitalize on opportunities. When they achieve this competency, they anticipate change and react quickly to unexpected change. They also position themselves for success by setting goals and then developing and promoting themselves.

Today's library and information professionals need to be multi-skilled in order to respond to the changing demands of the working environment and to make the most of the opportunities available. (Orme, 2008). The changing roles and new opportunities and the concern with safeguarding professional status have driven consideration of the skills both required by and exclusive to the library and information professional (Orme, 2008). Based on that, the professional requires abilities in three main areas: firstly is the professional skill, associated with the area of knowledge and where the library and information claims principal expertise (Kennan et al., 2006). Secondly are generic skills encompassing transferable abilities and broadly divisible into personal skills, managerial skills and IT skills. Thirdly are personal qualities such as flexibility and motivation which enable practitioners to work effectively and contribute positively to their organization, clients and profession (Orme, 2008). For libraries today to fit the bill, the librarians must possess some of the skills and competencies as outlined below.

### **2.7.2 Personal competencies**

Personal competencies are the individual characteristics that people bring to their duties, e.g. leadership ability or good communication skills (Graham and Bennet, 1998). Evaul (2007) defines personal competencies as a set of skills, attitudes and values that enable librarians to work effectively, communicate well, and focus on continuing learning throughout their career as

they demonstrate the value added nature of their contributions to survive in the new information world order:

1. Ability to create and maintain an environment of mutual respect and trust.
2. Visionary, foresight. Should be able to see the big picture and visualize how to develop the library to meet future plans.
3. Partnerships and alliance creation both internally with faculty, IT, users and externally with other libraries and institutions.
4. Exhibition of strong interest in lifelong learning and personal career planning.
5. Ability to share knowledge and commit to service excellence through use of good modelling structures.
6. Able to face up to challenges and see new opportunities both inside and outside the library.
7. Should be able to have effective communication skills, be a team player and show dynamic leadership qualities.
8. Organizational and systematic planning and prioritizing skills with ability to focus on what is critical to the library.
9. Recognition of the value of professional networking and solidarity.

### **2.7.3 Professional competencies**

Professional competencies enable librarians to respond effectively and efficiently to the constant development of new technologies (Obegi and Nyamboga, 2010):

1. Expert knowledge and familiarity with information resources plus the ability to critically evaluate, filter, and access them.
2. Specialized subject knowledge appropriate to the needs of the organization or client.
3. Apply appropriate information technology to acquire, organize and disseminate information.
4. Use appropriate business and management approaches to communicate the importance of information services to senior management.

5. Librarian's knowledge in the areas of information resources, information access, technology management, and research plus the ability to apply them in providing library and information services.
6. Administrative expertise to create and manage convenient, accessible and cost-effective information services that are aligned with the strategic directions of the organization.
7. Evaluate the outcomes of information use and conduct research to help the solution of information management problems.
8. Continually improve information services in response to the changing needs.
9. Be an effective member of the senior management team and a consultant to the organization on information issues.
10. Assess information needs of clients.

<http://www.sla.org/content/SLA/professional/meaning/competency.cfm>

#### **2.7.4 Generic competencies**

The following have been identified as the most common generic competencies (see Omekwu and Eteng, 2006):

- a. Excellent communication skill
- b. Have the ability to work in a team
- c. Have the ability to adapt to continuous change
- d. Be able to use office software such as word processors and spreadsheets
- e. Have specific computing skills like use of library software
- f. Have time management skills.

Research done by the Association of Commonwealth Universities (ACU) on four universities in East & Central Africa (Brennan, 2004) showed that better services and facilities can only be developed with staffs that are skilled, confident and motivated. It means that if librarians are better trained and equipped with relevant skills such as ICT, pedagogical, need analysis and presentation skills, then they will be able to understand the needs of their users and to communicate better how to assist them (Omekwu and Eteng, 2006).

## **2.8 CHALLENGES FACED BY LIBRARIANS IN THE INFORMATION AGE**

According to Obegi and Nyamboga (2011), the automation of all possible library activities and the presence of and constant changes in the field of electronic resources compel librarians to adapt to new circumstances. Continuous professional development becomes necessary in the form of courses, training, conferences and meetings, and the use of e-learning, or internet discussion forums (Obegi and Nyamboga, 2011). Below is a discussion of the challenges that face librarians today:

### **2.8.1 The internet**

Otieno (2011) defines the internet as a global system of interconnected computer networks that serves billions of users worldwide. The internet has become part and parcel of the modern world. It has influenced all aspects of our lives, how we communicate, how we interact and how we learn. It has created milestones in research and learning but has also brought along new challenges which must be tackled or else our education system will be corrupted in terms of quality (Otieno, 2011).

Besides the various complications associated with search engines and other social networking tools, Maness (2006) has observed the most obvious implication of blogs for libraries and librarians as being another form of publication that needs to be treated as such. They lack editorial governance and the security this provides, but many are nonetheless integral productions in a body of knowledge, and the absence of them in the library collection could soon become unthinkable. This will of course greatly complicate collection development processes, and the librarian will need to exercise a great deal of expertise when adding a blog to a collection. Wikis also complicate collection development and information literacy because it allows anyone registered with Wiki to publish, change and otherwise edit an article in the library world. This changes librarianship and lack of peer review and editorship is a challenge to librarians (Maness, 2006). On the other hand, RSS feeds provide users with a way to syndicate and republish content on the web. Such syndication of content is another Web 2.0 application that is already having an impact on libraries and librarians because libraries are already creating RSS feeds for users to subscribe to, including updates on new items in a collection, new services

and new content in subscription databases. In addition, they are also republishing content on their sites (Maness, 2006).

### **2.8.2 Technical services**

The rapid revolutionary advances in ICT have now transformed the way information is gathered, processed, organized, accessed, and disseminated to the user community. Today, the libraries are increasingly viewed as outdated and underrated without the use of modern web-based services. The pressure on libraries to modernize the way of delivering their services is now intense and more demanding (Obegi and Nyamboga, 2011).

### **2.8.3 Print verses electronic resources**

The goal of the libraries and librarians is to provide an effective combination of print, non-print and electronic resources, and the integration of the use of these resources in support of teaching, learning and research. Electronic resources, however, pose challenges not encountered with the acquisition of traditional library materials, such as access, interface, and technical support and licensing. The libraries therefore need to formulate a separate electronic resource collection development policy to address these issues. Besides, librarians as custodians of information are also facing apparent challenges to their new role, as physical resources migrate into electronic form and electronic delivery becomes more common. The ephemeral nature of electronic materials does, however, create a need to identify and where appropriate to archive authoritative versions of electronic information as opposed to the print version (Omekwu and Eteng, 2006).

### **2.8.4 Manpower training and development**

Abungu (2011) insists that libraries have been forced to re-train their staff or hire those with prerequisite skills to meet new demands created by technology. New titles are now found in the library such as: Electronic service librarian, Automation librarian, Programmer/Analyst, Digital librarian, Web Development librarian, librarian of Digital Repository, Systems librarian, etc. Libraries have also been forced to re-evaluate their collection/acquisition and circulation policies to be in tandem with new trends. Many library websites have service charters and strategic directions that address the emerging issues, e.g. the University of Calgary library has a policy to always acquire an electronic copy of a resource unless it exists exclusively in print format.

Inadequate library personnel, training and development policies badly affect the functioning of libraries for expected results. Most academic libraries are understaffed; information marketing skills among library professionals are low with lack of substantial training, poor professional mentoring platforms and networking among peers, lack of information literacy skills and subject specialization in this information age (Balaji and Kumar, 2010).

### **2.8.5 Dynamic users with dynamic needs**

Initially, librarians were thought of as gate-keepers, who shift their role from simply creating access to resources to generally meaningful relationships with library users (Bell, 2009). Today Dorrington, (2008) has a different view. He argues that libraries often have several different groups of users requiring various categories of information literacy training, as they come with different degrees of knowledge and skills in computer, internet and library usage. They may also have different information needs. Examples are medical libraries, which not only have to cater for students but also for clinicians who need immediate information relevant to specific patients and the researchers who want exhaustive literature searches and literature evaluation techniques (Lapidus et al., 2009:352). Therefore medical librarians often become active in the health literacy movement in acting as consumer health information specialists (Hess and Whelan, 2009). Librarians also need to pay more attention to student learning activities that have positively changed students' awareness of their personal development and created a feeling of empowerment and a sense of independence as a result of changes in libraries in recent decades (Vezzol, 2007:34).

### **2.8.6 Complex issues that require intensive research**

Bryson (1997) describes a reference librarian as one who has always had difficulties remembering most of the resources in the print environment and now the problem has magnified with the addition of electronic resources, many of which employ different search strategies and interfaces. Moreover, the print sources are still there and need to be utilised in conjunction with the electronic resources. In addition, information librarians must be knowledgeable about how

data files are organised and technical matters such as what users need to do to access library resources from their homes and offices.

Obegi and Nyamboga (2011) describe information and communication technology (ICT) as rapidly changing the whole world creating new challenges and opportunities. ICTs have had tremendous impact on library operation, resources, services, staff and users. Library and Information Science (LIS) professionals are confronting the challenging and dynamic technological environment, demanding the extensive and effective utilization of ICT in order to survive and meet the changing complex information needs of the user community. This is a wakeup call for LIS professionals to develop expert technological competencies required to make best use of the opportunities the ICT offers in order to provide a gateway access to a wide range and variety of information resources and services.

Information communication technology has changed the whole nature of publication, storage, transmission, delivery and use of information. The web has utterly transformed the information access behaviour of users in schools, colleges and universities (Obegi and Nyamboga, 2011). LIS professionals are facing many major paradigm shifts creating a new information environment, which really dictates the increased importance of professional competencies.

According to a study conducted by Xu (2006:62) librarians are professionally challenged. This is according to a study done in a paperless library to establish challenges facing librarians in their new roles. Based on this study, today, some libraries do not have established guidelines on how to provide library services in a new electronic environment. Considering the fact that most students prefer electronic resources because some of them live off campus and have computer and internet access at home, they do not understand how to go about searching for information. This is a clear indication that librarians do not provide the required information literacy skills which is a survival skill in the information age. Basically this has also proven to be a challenge to the librarians. This puts the librarians in an awkward position because the students heavily rely on them. On the other hand, Xu (2006:58) thinks that librarians should be committed to sharing knowledge and have the ability to face challenges and to see new opportunities both inside and

outside the library. On the same note, the librarians should also show strong interest and belief in partnerships and alliances, and show flexibility and a positive attitude in a time of continuing change.

### **2.8.7 Teaching information literacy**

According to Brun (2009), information literacy has been known by many different names, i.e. library orientation, bibliographic instruction, user education and information skills training which concentrates on cognitive and transferable skills such as problem solving, evaluation and communication skills.

UNESCO (2008) defines information literacy as the capacity of people to recognize their information needs, locate and access information needs, evaluate the quality of information, store and retrieve information, make effective and ethical use of information and create and communicate information.

The Chartered Institute of Library and Information Professionals define information literacy as knowing when and why you need information, where to find it, and how to evaluate use and communicate it in an ethical manner. Information literacy is essential to libraries because the right information to the right person at the right time is the key to success for any organization (Brun, 2009). However, for librarians working in healthcare environments, it has been challenging to introduce information literacy training into the healthcare environment because there is so little time and also there are different levels of information technology (IT) experience. Some health professionals did their original training without access to the internet or even computers. For them, information literacy can be very daunting; however, they need it to progress in their careers (Brun, 2009).

## **2.9 RELATED STUDIES: A BRIEF REVIEW**

Besides some of the related studies reviewed in sections 2.1 to 2.8 above, there are two specific similar studies that have been conducted that are worth mentioning. A study conducted by Cardina and Wicks (2004) on the changing roles of academic reference librarians over a ten year

period assessed the role changes that occurred for academic librarians from 1991 to 2001. A list of traditional as well as newly developed duties of reference librarians was developed and incorporated into the questionnaire. The results showed that changes occurred in the types of jobs most frequently performed, as well as in the amount of time spent on particular jobs. The majority of respondents comprising of 46 percent said they were more satisfied in their jobs in 2001 than they were in 1991. Thirteen percent were less satisfied and 37 percent had no change in their job satisfaction levels. This was an indication that the roles of the librarians have indeed changed.

Another study carried out by Biddiscombe (2002) on the changing roles of librarians in the higher education sector indicates that many converged library and computing services have been created and this has sped the process of change for librarians, particularly those who are working as subject specialists. Such librarians, particularly those working in hybrid teams with information professionals from different skill backgrounds, have to acquire expertise and undertake tasks that relate only to the training they received at the start of their career. This poses a great a challenge to these librarians.

According to a study conducted by Fourie (2008) on librarians and the claiming of new roles: how can we try to make a difference? It was established that librarians are fairly well aware of what should be done, but seemed not to be able to prepare in time. Librarians were often reported to be slow in taking on new technology. On the hand, in 2006, Finlay and Finlay found that librarians had collectively not yet embraced the internet and maximised its potential for everyday tasks. This was an indication that there was need for librarians to prepare to take on new roles.

Another study was conducted by Omekwu and Eteng (2006), on Road map to change: emerging roles for information professionals. The findings showed that change is inevitable for organisational survival and the maintenance of professional relevance. The implication here was that librarians and information professionals are by training positioned to continue to make a difference in information handling and management both now and in future. The study

recommended forms of repositioning that are vital for librarians if they were to continue to be relevant in information service delivery.

Chan, Kwok and Yip (2005), in their study on changing roles of reference librarians: the case of the HKUST institutional repository, established that the roles of reference librarians changed in the process of building the institutional repository. There were extensions of existing roles in terms of system evaluation, advocacy, and reference services. Brand new roles included content recruitment and interpreting publisher's policies. It also pointed out possible directions which can make the repository sustainable. This is an indication that indeed roles of librarians can change depending on which project you embark on.

## **2.10 SUMMARY OF THE CHAPTER**

This chapter gives an overview of how the roles of librarians have evolved over time. ICTs have had tremendous impact on library operations, resources, services, staff and users. Previous studies have indicated that the roles of librarians have changed and librarians are professionally challenged considering the environment under which they operate today. The subsequent chapters, therefore, seek to determine the changing roles of academic librarians in the current information age as revealed by the findings.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 INTRODUCTION**

Hall and Hall (1996:29) define methodology as the philosophy or general principles behind research while Everitt (1992:50) sees methodology as a theoretically informed framework that can be used to guide and analyse the practice process of research. On his part, Kombo (2006: 33) defines methodology as the rules and procedures of research work. This section provides a description of the research methodology adopted for this study by outlining such issues as research paradigm, research method, area of study, target population, data sources, data collection methods and instruments, data analysis and presentation.

### **3.2 RESEARCH PARADIGM**

Qualitative and quantitative methodologies are the two main approaches of social science research (Machmias and Machmias, 1999). However, there is also a combination of both qualitative and quantitative approaches, a paradigm that has come to be known as mixed methods research, or simply MMR (Creswell, 2003).

Qualitative methods are described as “techniques and measures that do not produce numerical data. More often, the data are in narrative form rather than numbers” (Creswell, 2003; Neuman, 1997; Gary, 2009). On the other hand, the quantitative method of research is one which is based on the methodological principles of positivism and adheres to the standards of strict research developed before research begins (Creswell, 2003; Neuman, 1997). The principle of positivism emphasizes that the study should begin with the gathering of information rather than speculation (Creswell, 2003). Quantitative research involves the collection of numerical data in order to explain, predict and control phenomenon of interest, data analysis being mainly statistical (Gary, 2009). The quantitative method involves collecting data in order to test hypotheses or answer questions concerning the current status of the subject of the study (Creswell, 2003). Mixed methods as defined by Creswell (2003) is “a combination of two or more theories, data sources, and methods of investigation in one study of a single phenomenon to converge on a single construct”. Gall et al. (2003) define “mixed methods as a process of using multiple data

collection methods, data sources, analysis or theories to check the validity of study findings”. In mixed methods research, results from one method can help develop or inform another method or one method can be nested within another method to provide insight into different levels of analysis (Gall et al., 2003). Mixed methods are used to reduce bias that is likely to occur if only one method is used (Gall et al., 2003).

The current study employed both quantitative and qualitative approaches. Both methods supplement each other in that qualitative methods provide in-depth explanations while quantitative methods provide the hard data needed to meet required objectives and to test hypotheses (Basavanthappa, 1998). The choice of the qualitative approach is based on Amin’s (2005:54) and Neuman’s (1997) arguments that the approach is used to research people in their natural settings, achieving deeper understanding of the respondents’ world. Furthermore, qualitative research deals with the respondents directly as opposed to the quantitative research paradigm. On the flip side of the coin, quantitative research believes in maintaining objectivity by remaining distant and neutral from the respondents to eliminate any form of subjectivity that could bias the findings (Amin, 2005). Qualitative research also allows a higher level of flexibility as opposed to other research paradigms. The intention of using a qualitative approach in this study was to give the researcher greater insight into the nature of the problem the librarians were facing. The qualitative research approach was also used purposely to promote greater understanding of not just the way things are but also why they are the way they are (Amin, 2005:42). This understanding was through intensive collection of narrative data obtained from personal interviews and documentary study based on the research questions and objectives of the study.

### **3.3 RESEARCH METHOD/DESIGN**

The term ‘research method’ is often synonymously used with ‘research design’. Kombo (2006:70) defines a research design as the structure of research which is the “glue” that holds all of the elements in a research project together. Orodho (2003:52) defines it as the scheme, outline or plan that is used to generate answers to research problems while Kothari (2004:63) sees a

research design to be an arrangement of conditions for collections and analysis of data in a manner that aims to combine relevance with the research purpose.

There are various methods available to social scientists, namely: survey, exploratory designs, ethnography, correlation, experimental, historical and case studies. A survey is used to investigate populations by selecting samples to analyse and discover occurrences (Watson et al., 2008). Surveys are used to gather data from members of a population with respect to one or more variables at a particular time. The purpose of surveys in research, therefore, is to obtain information about preferences, attitudes, practices and concerns or interests of a group of people on the above issues (Watson et al., 2008). The results are then extrapolated to the entire population.

Explorative designs can take many forms, depending on the nature of the main study, the purpose of the research, the study object, the state of knowledge in the area of investigation and, specifically, on the purpose of the exploration (Denzin, 1978).

The ethnography method involves interacting with participants in their real life situations and for a long time becoming part of them (Borg and Gall, 1996). It also involves very intensive data collection in a natural setting. The rationale behind using ethnographic research in many social studies is the belief that behaviour is greatly influenced by the environment in which it occurs (Borg and Gall, 1996). The purpose of ethnographic research, therefore, is to provide a complete picture of the environment being studied and the fact that these studies are extended over several months through observation means that they give a longitudinal perspective not possible with many other types of research. This is a very effective method but could be quite difficult and only experienced researchers can best use it (Watson et al., 2008).

The correlation method involves collecting data in order to determine whether and to what degree a relationship exists between two or more quantifiable variables (Watson et al., 2008). The purpose of correlation, therefore, is to explore relationships between variables and to predict a subject's score on one variable given his or her score on another variable.

An experiment involves manipulation of independent variables to determine their effect on a dependent variable (Denzin, 1978). The experiments deliberately and systematically manipulate certain stimuli, treatments or environmental conditions and observe how the conditions or behaviour of the subject is affected or changed. Therefore, experimental design provides a systematic and logical method for answering the question (Denzin, 1978).

Historical design explores, explains and understands past phenomenon from data already available. The purpose of historical design is to arrive at conclusions about causes, trends and effects of past phenomena in order to explain and present and predict and control future phenomena. It is useful where primary data cannot be collected (Borg and Gall, 1996).

This study was descriptive in nature. The researcher adopted a survey research method. The survey was carried out at the University of Nairobi library and its five other constituent college libraries. Basavanthappa (1998) defines a survey as the branch of research that examines the characteristics, behaviour, attitude and intentions of a group of people by asking individuals belonging to that group (typically only a subset) to answer a series of questions. Basavanthappa (1998) further defined a survey research as the process of gathering current data from subjects so that new information can be obtained. The purpose of a survey research study is to provide an accurate portrayal of group subjects with specific characteristics. Survey research studies are descriptive and exploratory in nature. The major advantages of a survey are that a great deal of information can be obtained from a large population in a fairly economical way and that the survey research information can be surprisingly accurate (Basavanthappa, 1998). Data is gathered in a more natural setting, the variables are examined as they are found in the existing social milieu and, lastly, it is the only method suitable to cover large populations. Some of the limitations of a survey study are that the information obtained in a survey tends to be superficial. Besides, the breadth rather than the depth of the information is emphasized (Basavanthappa, 1998). Another limitation is that conducting a survey requires a great deal of expertise in a variety of research areas. The survey investigator must know sampling techniques, questionnaire construction, and interviewing and data analysis to produce a reliable and valid study. Lastly, large scale surveys can be time consuming and costly, although the use of on-site personnel can

reduce costs (Basavanthappa, 1998). A survey research study covers a large population, in this case the librarians of the University of Nairobi library (CHSS) and its other five constituent college libraries which were studied in depth in an attempt to give some meaning and additional insight into the subject under review. The limitations of the survey research study notwithstanding, it was deemed as the most appropriate method for this study because it provided the researcher with an opportunity to identify a number of variables, in this case, the changing roles and functions of librarians, which was relevant in explaining the state of the librarians in the University of Nairobi library and its constituent libraries in a more detailed manner.

### **3.4 AREA OF STUDY**

This study focused on the University of Nairobi's six colleges, namely College of Humanities and Social Sciences (CHSS) located at the main campus, College of Education and External Studies (CEES) Kikuyu Campus, College of Health Sciences (CHS), the Medical school, College of Agriculture and Veterinary Sciences (CAVS) Upper Kabete Campus, College of Biological and Physical Sciences (CBPS) Chiromo campus and College of Architecture and Engineering (CAE) which operates under the umbrella of CHSS library, all of them having a total of 13 libraries given that some colleges have more than one library. The areas of study were chosen because the researcher is familiar with the institutions. The library staff members could be contacted and identified easily with the assistance of the library director for data collection procedures. Furthermore, most of these libraries are also automated thus providing a basis for the study given that the changes that have been witnessed in libraries as far as librarians' roles are concerned are largely associated with the emergence of information and communication technologies.

#### **3.4.1 Jomo Kenyatta Memorial Library (JKML): main library**

JKML library is situated at the University of Nairobi's main campus and caters for both CHSS and College of Architecture and Engineering (CAE). The CHSS library also houses the East Africana collection, UN collection, archives, Graduate Research library, periodicals collection and computer laboratories for training and internet access. The library has a stock of over

700,000 volumes of books and bound journals acquired through purchases and donations (Library annual report, 2012). The library subscribes to over 45,000 peer reviewed full text electronic journals in all disciplines. Access to e-resources has been enhanced through expansion of computer laboratories and other access points throughout the university (Library annual report, 2012). The library currently subscribes to 54,000 electronic books while continuing to evaluate other databases with a view to accessing additional titles (Library annual report, 2012). The main functions and objectives of the library as listed in the University of Nairobi Act 1985 are to carry out basic functions of acquiring, organising and disseminating information in support of the University mission and more specifically to provide reading, reference, research materials and other library services to the students, academic staff, non-academic staff and to a limited number of qualified outsiders (e.g.. researchers) who pay a fee to use the library services. The library and its other constituent libraries has 154 members of staff of whom 124 are trained librarians (University of Nairobi Staff Establishment, 2010).The library popularly known as Jomo Kenyatta Memorial Library (JKML) uses Vubis Smart Library System, which was launched on January 24<sup>th</sup> 2006 at the University of Nairobi main campus (University of Nairobi Library Prospectus, 2006). Vubis Smart is an integrated library automation system which was initially developed by the library of the Vrije University Brussels in 1983. Vubis Smart was installed on a new server at the University of Nairobi in 2001 and the library staff got catalogue training and started the conversion of the manual catalogue. Conversion was done via RetroCat. Searching through the documents can be done in all University of Nairobi branch libraries.

#### **3.4.1.1 School of Business Library (Mwai Kibaki Library): Lower Kabete**

The Mwai Kibaki Library serves the School of Business campus and builds collections for the other satellite campus libraries in Kisumu and Mombasa affiliated to the School of Business. It is located along Lower Kabete Road and is next to the Kenya Institute of Administration (KIA). It has a seating capacity of 600 and a stock of 30,000 volumes in subjects specifically related to business studies.

#### **3.4.1.2 School of Law Library: Parklands**

The library is located at the School of Law Parklands Campus; it has a stock of 30,015 volumes in subjects specifically related to law, print journals, theses and dissertations. The School of Law library has two branches, one in Mombasa and another in Kisumu.

#### **3.4.1.3 Institute for Development Studies (IDS) Library**

The Institute for Development Studies Library is located in the University of Nairobi, Main Campus, Administration block, first floor. The library provides information services to postgraduate students and staff. Services provided by the library include references, loans, inter-library loans and study areas.

#### **3.4.1.4 Population Studies and Research Institute (PSRI) Library**

The Population Studies and Research Institute Library is located in the University of Nairobi, Main Campus, Administration block, second floor. The library provides information services to postgraduate students and staff. Services provided by the library include references, loans, inter-library loans and study areas.

#### **3.4.1.5 Institute of Anthropology, Gender and African Studies (IAGAs) Library**

The IAGAS (Institute of Anthropology, Gender and African Studies) Library is situated at the Museum Hill at the Nairobi National Museum in the Institute of Anthropology, Gender and African Studies Building. The Library is rich in anthropology, gender and African studies materials. It serves undergraduates, postgraduates and academic staff of the University of Nairobi with relevant materials in the above mentioned areas.

#### **3.4.1.6 ADD Library**

This Library is located off State House Road, opposite Young Men's Christian Association (YMCA) Hostels. It is surrounded by both the mens' and women's' halls of residence. Popularly referred to as the ADD Library, it is conveniently situated within walking distance to the Nairobi Central Business District. It is housed on the ground floor of the Architecture, Design and Development Building next to the Department of Urban and Regional

Planning, but opposite the School of Arts & Design. It serves the School of the Built Environment (SOBE) and the School of Arts and Design (STADS). The School of Engineering is served by the Jomo Kenyatta Memorial Library. However, due to its strategic location near the students' halls of residents it's a popular study library for Engineering, Medical, Humanities, Biological and Physical Sciences students. It has a total collection of 17,135 volumes composed of books, bound journals, theses and dissertations. It has the best collection on the Built Environment in East and Central Africa. In addition, it has access to disciplinary and interdisciplinary electronic databases and open access resources on the curriculums offered by the University of Nairobi. The Library, as part of the University of Nairobi Library system, is fully automated. It offers innovative information services to its users. It offers services to all the registered university community and alumni members. The Library conducts information literacy training and user education to all its intended users.

### **3.4.2 Medical School Library**

The history of the Medical School Library can be traced back to 1967 when the Faculty of Medicine was established. The Library started with about 30 student users and one librarian. It is situated at Kenyatta National Hospital along Ngong Road. It has also a branch called Dental Sciences Library in the School of Dental Sciences along Argwings Kodhek Road opposite the Nairobi Hospital. Currently the library serves a population of 2,238 under-graduate and post-graduate students including teaching and non-teaching staff (University of Nairobi Medical School Prospectus, 2006:21). The main functions and objectives of the Library as listed in the University of Nairobi Act 1985 are to carry out basic functions of acquiring, organizing and disseminating information in support of the University's mission and more specifically to provide reading, reference, research materials and other library services to the students, academic staff, non-academic staff and to a limited number of qualified outsiders who pay a fee to use the library services. The library has 20 members of staff of whom ten are trained librarians.

### **3.4.3 Kabete Library**

Kabete Library is within the College of Agriculture and Veterinary Services (CAVS) located off Kapenguria Road, 14 km to the northwest of Nairobi. It has three (3) floors carrying a stock of

approximately 56,400 volumes composed of books, theses and periodicals. The Library subscribes to over fourteen electronic databases containing journals and books relevant to CAVS Library users. In addition, the following services are offered; user information literacy programmes, online catalogue, electronic lending, access to e-resources, internet services, interlibrary loan (ILL), literature searches, study rooms as well as a current awareness service. The library is open to the University of Nairobi fraternity as well as Alumni.

#### **3.4.4 Kikuyu Campus Library**

The College of Education and External Studies has three libraries, namely: Kikuyu Campus Library, Kenya Science Campus Library and Kisumu Extramural Centre Library. In addition, book lending and reference services are provided in the following extra-mural centres belonging to the college: Meru EMC, Nyeri EMC, Kakamega EMC, Garissa EMC, Kisii EMC, Kapenguria EMC, Lokichogio EMC and Thika EMC.

#### **3.4.5 Chiromo Library**

Chiromo Library is the College of Biological and Physical Sciences (CBPS) library. It is about two kms from the Nairobi Central Business District off Riverside Drive and near the old Chiromo Mortuary. It has a seating capacity of 700 and 12 study units for graduate students and researchers. It stocks approximately 95,161 hard copy books and bound journals. In addition, it has access to over 70,000 e-books and 50,000 e-journals. The library is open to members of staff, students, researchers and alumni. Chiromo Library has a computer laboratory of ten computers which is used for online information search activities. Other services include daily training of the staff and students on online information search strategies, interlibrary lending, current awareness service and special information literacy services through workshops.

**Table 2: University of Nairobi library staff establishment**

<b>S/NO.</b>	<b>TITLE</b>	<b>NO. OF STAFF</b>
1	Library Director	1
2	Deputy Library Directors	3
3	Senior Librarians	12
4	Librarians	12
5	Senior Library Assistants	25
6	Library Assistants (Permanent)	51
7	Library Assistants (Contract)	10
8	Library Attendants (Certificate Holders)	10
9	Bookbinders	6
10	Secretaries	8
11	Photographers	2
12	Messengers (2) Driver (1) Cleaners (14)	15
	<b>TOTAL</b>	<b>155</b>

**Source: University of Nairobi staff handbook (2010)**

### **3.5 TARGET POPULATION**

It is essential that the researcher defines and describes a population carefully and that the researcher specifically stipulates the criteria to be included in the population (Compte and Preissle, 1993). Because the researcher seldom has access to the entire population, she/he limits herself/himself to the accessible population under which the research results will be generalized and that is the target population. Choosing the correct population is important because the researcher's population should contain all the variables of interest to the researcher (Compte and Preissle, 1993).

Amin (2005:235) defines target population as the population with which the researcher ultimately wants to use to generalize the results. The total number of staff employed at the University of Nairobi and its constituent college libraries is 155. However, the current study

targeted a total number of 124 trained library workers who included the library director and three deputy library directors. The 124 trained library workers have acquired some kind of training in library and information science ranging from certificate level to PhD level (University of Nairobi Staff Establishment, 2010). This number also included holders of postgraduate diplomas in library and information science. The remaining 31 included 14 cleaners, eight secretaries, two photographers, four book binders, one driver and two messengers.

### **3.6 SAMPLE AND SAMPLING TECHNIQUE**

A sample is a portion of the population whose results can be generalized to the entire population (Amin, 2005). Selecting a sample is very important step in conducting a research study, particularly for quantitative research. The researcher must determine the size of the sample that will provide sufficient data to answer the research problem (Amin, 2005). Sampling, therefore, is a process of extracting a portion of the population from which generalization to the population can be made (Amin, 2005). To obtain a representative sample, the researcher should consider the characteristics of the target population when sampling is done.

The purpose of sampling in research is to enable the researcher to study a relatively small number of units in place of the target population, and to obtain data that is representative of the target population. The advantages of sampling include but are not limited to: reduced costs in that if data is collected for the entire population, costs may be very high as opposed to data that is collected from a sample which is economical. Secondly, greater speed; the use of sampling economizes on time. Lastly, greater accuracy; sampling ensures completeness and a high degree of accuracy due to a limited area of operations. In dealing with a sample, the volume of work is reduced and processing of data is also done more accurately which in turn produces accurate results. The major disadvantage of sampling is that the selected units may not be representative of the population even when the best statistical methods have been applied. This is especially the case when the sample size is small.

Purposive sampling was used in this study when selecting respondents from each of the 13 libraries. Only staffs trained in library science/studies were selected. This was done through the

help of the respective college librarians. The respondents were divided into two categories namely;

- University Management: This involved employees who were in positions of responsibility and included the library director, college librarians as well as their deputies.
- Other library staff: These involved library staffs who have acquired some kind of training in library and information science ranging from a diploma to PhD level and holders of post-graduate diplomas in library and information science excluding certificate holders, the management, those on leave and those who declined to be included in the study.

Purposive sampling was used because the researcher based her selection on her knowledge of the group that was sampled and had in mind that those respondents had information that she required for the study.

### **3.7 DATA COLLECTION METHODS AND PROCEDURES**

In setting out to collect data, researchers have several research techniques or methods at their disposal. Therefore it is important to choose an appropriate data collection method for the research at hand to enhance the validity of the findings (Amin, 2005:67). Hence, this section highlights the procedures, sources, methods and instruments of data collection.

#### **3.7.1 Data sources**

There are two types of data sources, namely; primary and secondary (Ulin and Robinson, 2002). Primary sources are those which provide first-hand information. Data is gathered directly from respondents through questionnaires, interviews, group discussions, observation and experimental studies (Ulin and Robinson, 2002). On the other hand, secondary sources are those which have already been collected by someone else and which have already been passed through the statistical process (Ulin and Robinson, 2002). The researcher collected data from both the primary and secondary sources. Primary data was gathered directly from the librarians working in the library. This was done through questionnaires and personal interviews. Secondary data was gathered through documentary sources. These sources included: library annual reports, library policies, library job advertisements outlining responsibilities, skills professional

competencies and personal competencies needed for the job and other library bulletins outlining library processes and procedures.

### **3.7.2 Data collection procedures**

After the researcher obtained permission to embark on the study, she visited all the respective libraries to make an appointment with the library director and other college librarians on the appropriate date, time, and place for conducting the interviews and administering of the questionnaires. After an appointment was granted, the researcher prepared a schedule for the visit. In personal interviews, the researcher engaged the library director, respective college librarians and their deputies in a face-to-face interview. Notes were taken by the note taker and any observation made during the interview was also recorded. In documentary study, the researcher requested for the relevant documents from the authorities from which she obtained data through observation and partly interviewing the parties concerned for clarification purposes.

### **3.7.3 Data collection methods**

There are various methods used for data collection. They include questionnaires, interviews, observation, documentary study and focus group discussions.

Gary (2009) defines a questionnaire as a printed document that contains instructions, questions and statements that are compiled to obtain answers from respondents. A questionnaire consists of a number of questions printed or typed in a definite order on a form or set of forms (Gary, 2009). The respondents are expected to read and understand the questions and write down their replies in the spaces provided. The questionnaire can either be closed-ended or open-ended. The administration of the questionnaire can either be “drop and pick later” method or can be emailed to the respondents (Brink and Wood, 2001). The questionnaire is not only less expensive; it can also be given simultaneously to a relatively large population. According to Brink and Wood (2001), questionnaires allow subjects to freely contribute their opinions even on controversial topics because there is the element of anonymity with questionnaires. Additionally, questionnaires are standardized for all respondents with no risks of change in emphasis (Brink and Wood, 2001). On the contrary, this method has a low rate of return of the duly filled

questionnaires, questionnaires can be used only with educated respondents, there is possibility of ambiguous replies or omission of replies to certain questions, and interpretation of omissions is difficult (Brink and Wood, 2001).

Gary (2009) defines an interview as a discussion with someone in which the researcher tries to get information from them. The information may be facts or opinions or attitudes, or any combination of facts, opinions or attitudes. There are three basic types of interviews: structured interviews, unstructured interviews and semi-structured interviews (Gary, 2009). Each involves an interviewer in face-to-face contact or telephone contact with another person, namely the interviewee (Gary, 2009). Interviews are advantageous because they provide in-depth data which is not possible to get using a questionnaire; interviews yield higher response rates, mainly because it is difficult for the respondent to completely refuse to answer questions or ignore the interviewer, and, unlike questionnaires, the interviewer can get more information by using probing questions. On the contrary, interviews are more expensive. Researchers have to travel to meet the respondents and interviewing requires a high level of skills. It requires communication and interpersonal skills. Interviewers need to be trained to avoid bias which can interfere with the responses originating from varying techniques of interviewing (Gary, 2009).

Observation method is one of the most important ways of collecting data in social research (Brink and Wood, 2001). Under the observation method, the information is sought by way of the investigator's own direct observation without asking permission from the respondents (Brink and Wood, 2001). An observation is an indirect method of data collection since in most cases it involves collecting information without the full knowledge of the respondents. Often even if the respondent knows that he/she is being observed, the actual nature and purpose of observation are not known (Brink and Wood, 2001). Observation is preferred when studying children, illiterates, handicapped persons, and traits that cannot be tested with pen and paper. The first kind of observation is called 'structured observation'. Structured observation employs a formal and strictly organized procedure, with a set of well defined observation categories and is subjected to high levels of control and differentiation and it is organized and planned before the study begins (Sarantakos, 1997). The second kind is called 'unstructured observation'. Unstructured

observation is loosely organised and the process of observation is largely left up to the observer to define data (Sarantakos, 1997). The main advantage of this method is that it avoids bias from respondents which is possible with other methods, for example questionnaires (Adler and Adler, 1994). Secondly, the information obtained under this method relates to what is currently happening, meaning it is recorded as it occurs (Adler and Adler, 1994). Thirdly, this method is independent of respondents' willingness to respond and as such is relatively less demanding of active cooperation on the part of the respondents (Brink and Wood, 2001). The researcher gains first-hand experience and, lastly, the researcher is able to notice unusual aspects (Bowling, 2002). On the other hand, the observation method has limitations which include time consuming in that sometimes the interviewer sits waiting for an activity to happen so that he/she can observe (Bowling, 2002). It may take time for an activity to happen. It is also expensive and the information provided by this method is very limited. Secondly, sometimes unforeseen factors may interfere with the observational task (Brink and Wood, 2001). It cannot offer data related to frequency of behaviour; it cannot also study opinions and/or attitudes directly. Lastly, observation cannot provide information about past, future or unpredictable events (Brink and Wood, 2001).

Parker and Tritter (2006) define a focus group discussion as a group that gathers people from similar backgrounds or settings or experiences to handle and discuss an issue or topic of interest to the researcher. In focus group discussion, the group brainstorms on the issues but the conclusion of the group findings are not the outcome of group consensus but a synthesis by the researcher (Parker and Tritter, 2006). The purpose of focus group discussion is to stimulate discussions from multiple views of the group participants so that the researcher can examine and internalize the different views (Webb, 2002). In focus group discussion, participants are given a chance to agree or disagree with each other so that they can reach conclusion (Webb, 2002). In focus group discussion, the facilitator follows a pre-determined discussion guide to direct the discussion with the purpose of collecting in-depth information about a group's perception, attitudes and experiences in a defined topic or issue (Fern, 2001). In focus group discussion, participants should be of the typical interrelated population, for example, if it is library matters, then the librarians should be the typical sample to participate in the group discussion (Parker and

Tritter, 2006). The advantages of focus group discussion as described by Fern (2001) include: allowing flexibility of the members to discuss freely on an issue; discussions allow participants to talk to members and facilitators directly enabling first-hand information to be collected. Also, in a group setting, people loosen up thus the interaction is free and the feelings, experiences and ideas are valued. As a result respondents express themselves more openly and data collected is true (Webb, 2002). Focus group discussions provide many possible answers to specific questions as opposed to questionnaires that elicit specific answers for given questions. Focus group discussions provide background information that enables the researcher to formulate hypotheses for a more elaborate study (Morgan, 1997). Focus group discussions have some limitations as follows: group conditions might oblige people to hide their real opinions especially if their views can have effects on their personal life (Fern, 2001); some members' dominance of the discussion might affect the direction and outcome of the discussion (Morgan, 1997); some members of the group may not participate in the discussion; focus group generates a large amount of data that is often difficult to analyze; and, lastly, the findings of focus group discussion are not representative as small samples of participants are selected. In this case, the views of participants may not represent the majority of the population (Fern, 2001). Welman, Kruger and Mitchel (2009) argue that a focus group discussion constitutes 5 to 12 people in the discussion group. However Kombo (2006) has a different view. Kombo (2006) describes a focus group as one that is composed of 6 to 8 individuals who share certain characteristics which are relevant for the study. The purpose of a focus group discussion is to offer an opportunity for individuals to exchange ideas and validate personal experiences which benefit the participants who enjoy the opportunity of being heard and valued (Welman, Kruger and Mitchel, 2009). The advantage of focus group discussion is that it saves time compared to individual interviews. However, there may not be equal participation by group members. Some people may be reluctant to express their views in the presence of others (Nieswiadomy, 1998).

Document study is a method which involves delivering information by carefully studying written documents, or visual information from sources called documents (Ulin and Robinson, 2002). Gathering data from documents represents an entirely different proposition from gathering data from people. In document study, the researcher critically examines documents which may be

public, private or recorded information related to the issue under investigation. The purpose of document study is to obtain information at the pleasure of the researcher and without interrupting the research participants (Ulin and Robinson, 2002). Document study enables the researcher to obtain the language and words of the informants. The researcher also accesses data at his/her convenient time. The data from documents saves the researcher time and expense in transcribing. However, there is also one limitation. This data was not created for research and therefore nothing can be changed or altered (Ulin and Robinson, 2002).

Questionnaires and personal interviews were used to collect data. Data was collected using structured and semi-structured questionnaires that were completed by the library staff. A letter to them was annexed to the questionnaire explaining the intentions of the survey. The administration of the questionnaire was through the “drop and pick later” method. The questionnaire had six sections. Section A consisted of questions aimed at obtaining general information about the respondents. Sections B, C, D, E and F focused on the key dimensions that were used to determine the changing roles of academic librarians in the current information age. Follow up on the respondents was done through telephone calls. The questionnaires were then collected upon completion and subsequently analysed. The questionnaire method was preferred because questionnaires are easy to administer, to analyse and was economical in terms of time and money. A personal interview as described by Sadhu and Singh (1980) is a data collection method which uses personal contact and interaction between an interviewer and an interviewee. It may take place either in a face-to-face situation or via telephone. The researcher interviewed the library director, and the deputy directors of the library. The interviews were carried out face-to-face in the director’s office. The researcher acted as the moderator with the assistance of the note taker who recorded all the proceedings of the interviews. Personal interviews provide in-depth data which is not possible to get using questionnaires. Interviews also permit in-depth free responses. They are flexible and adaptable. One is able to get impressions of the respondents’ home, office, gestures, and tone of voice and, lastly, a lot can be learnt by observing the respondents’ non-verbal communications. The researcher can also get more information using probing questions. Personal interviews also yield higher response rates mainly because it is difficult for a respondent to completely refuse to answer questions or ignore the interviewer as

with a questionnaire which can be ignored or lost (Amin, 2005). On the flip side of the coin, interviews are expensive and time consuming. Interviews may intimidate and annoy respondents, may provoke bias and antagonism due to differences of race, sex, socio-economic status between the interviewer and the respondent (Good, 2000).

#### **3.7.4 Data collection instruments**

Data collection instruments are tools used to obtain data from the respondents (Orodho, 2003). There are five most commonly used instruments in the field of social sciences, namely; observation forms, checklists, interview schedules, document analysis/study, and questionnaires (Good, 2000).

Questionnaires as a data collection instrument are relatively cheap to administer. Questionnaires can cover a wide geographical area, they are self-administering, can be made anonymous, and they are easy to interpret (Good, 2000). Questionnaires are also impersonal and do avoid some of the problems of personal interviews. They are also flexible and can be completed in the respondents' own time (Good, 2000). However they suffer from a low return rate. Some respondents don't respond to the questionnaire. There is no assurance the questions were understood too. There is also no assurance that the addressee is the one who answered, for example the boss may give it to the secretary to respond (Good, 2000). Lastly, you can only research on literate people (Good, 2000). Focus group discussions allow flexibility of members to discuss freely on an issue (Morgan, 1997).

The researcher used a questionnaire to gather data from the library staff. A detailed interview schedule was also used to obtain data from the respondents for personal interviews. The questions in the interview guide were unstructured so as to give the researcher freedom in terms of content and structure (Orodho, 2003). A checklist is a data collection instrument used in observation and document study methods (Orodho, 2003).

### **3.7.5 Reliability and validity of data collection instruments**

Mugenda and Mugenda (2003:95) define reliability as a measure of the degree to which a research instrument yields constant results or data after repeated trials. Hall and Hall (1996:43) see reliability as the extent to which a test would give constant results if applied by different researchers more than once to the same people under standard conditions, while Comarc (2000:306) defines validity as the extent to which a test, questionnaire or other operation is really measuring what the research intends to measure. According to Cormac (2000), this is only applicable to quantitative research. He argues that there is no consensus among qualitative methodologists on how to tackle the problem of validity and reliability in qualitative research. However, Carter and Porter (2003) explain that reliability can be measured through an instrument that if administered in the same circumstances on two separate occasions should provide identical data and, on the other hand, validity can be measured through an instrument which actually does what it purports to do. However, reliability is a pre-condition for validity in that an unreliable measure cannot be valid. Therefore it is important to appreciate that reliability does not guarantee validity. On the same note, Strauss, (1987) argues that, in qualitative studies, generally researchers know from the outset that they are not going to get consistent responses to the questions they ask even if the exercise is repeated.

In order to ensure that both the instruments were reliable in the current study, a pilot study was conducted. The researcher interviewed the college librarian of Kenya Medical Training College Library and the deputy who possessed similar characteristics to ensure that the questions on the interview schedule were measuring what they were supposed to measure before administering it to the library director and the deputies of the respective libraries under study. In terms of measuring validity in personal interviews, the researcher asked the respondents the same questions twice within a short time frame to see if the same responses were obtained (Comarc, 2000:308). To measure validity for the questionnaires, the researcher pre-tested the questionnaire at Jomo Kenyatta University of Agriculture and Technology. Fourteen librarians completed the questionnaire prior to the actual study. Modification was then done to ensure validity and reliability. The researcher also consulted with experts in the field of library and information

sciences (LIS) as well as the researcher's supervisor who provided advice and guidance on the instruments.

### **3.8 DATA ANALYSIS AND PRESENTATION**

The goal of data analysis is to provide answers to the research questions (Neuman, 1997). Creswell (2003) defines data analysis as the process of analysing data in a systematic fashion so that trends and patterns of relationships can be detected. Besides, the plan for data analysis comes directly from the question, the design, the method of data collection, and the level of measurement of the data. As a result, this section covers the following: data cleaning, analysis and presentation.

#### **3.8.1 Data cleaning**

Data is usually 'cleaned' to eliminate errors. No matter how the data has been entered, some errors are inevitable (Babbie, 1998:218). The researcher examined the distribution of responses to each item in the data set. In personal interviews, the researcher made necessary changes on the notes taken after the interview by clarifying issues that did not make sense to ascertain correctness. In questionnaires, the researcher cleaned the raw data by identifying the incomplete and incomprehensible questionnaires and putting them aside.

#### **3.8.2 Data analysis**

One of the most common data analysis methods in qualitative research is content analysis. Content analysis involves analysing the contents of documentary materials such as books, magazines, newspapers and the contents of all other verbal materials which can be either spoken or printed (Sadhu and Singh, 1980). Mason (1996) sees content analysis as the technique in which the researcher organizes the information collected into categories and revises until final perspectives emerge. However, the use of content analysis varies according to the type of qualitative study that is being conducted. Content analysis involves looking closely for patterns or themes that recur in the data to provide an explanation of what was discovered through the research (Miles and Hubermans, 1994). Some of the strengths of content analysis include examining the intensity with which certain words have been used. The researcher then quantifies

and analyses the presence, meaning and relationships of such words and concepts, then makes inferences about the messages within the texts of which these are apart (Miles and Hubermans, 1994). In content analysis, the data is in permanent form and hence can be subject to re-analysis, allowing reliability checks and replication studies (Mason, 1996). However, the documents have been written for some purpose other than for the research and it is difficult or impossible to allow for biases or distortions that this introduces (Mason, 1996). Based on that, the researcher contended that the method was suitable to conduct data analysis whereby she developed themes and categorized data according to specific themes.

Quantitative data was analysed using descriptive statistics. The Statistical Package for Social Sciences (SPSS) computer programme was used in analysing the data. The data was then presented in tables and graphs by use of frequencies and percentages.

Qualitative data was transcribed thematically for subsequent analysis using content analysis. Thematic synthesis involved three phases. First was line by line coding of the findings of the primary data, then development of descriptive themes and, lastly, development of analytical themes. These enabled the researcher to exclude any data that was not directly relevant to the research topic and made data more manageable (Miles and Hubermans, 1994). The researcher used analytical coding. This kind of coding was chosen because it was based on interpretation and reflection on meanings in context and creating of categories that expressed ideas about the data (Strauss, 1987). This coding started out in broad categories of common themes and a code number allocated to this alongside every piece of information relating to the common theme. This pattern continued with each theme identified until no new themes emerged for analysis (Strauss, 1987). Conclusions were then drawn from the data.

### **3.8.3 Pilot study**

Aina (2002:40) states that the purpose of a pilot study is to act as the dress rehearsal of the main study and help clarify potential problems. Also known as a pre-test, it generally provides an indication of the effectiveness of the questionnaires, the code chosen for pre-coded questions, and the probable cost and duration of the main study in its various stages. A pilot study was

carried out prior to this study to determine the changing roles of academic librarians in the current information age. The pretesting of the questionnaire was done at Jomo Kenyatta University of Agriculture and Technology (JKUAT). Fifteen copies of the questionnaire were distributed to the respondents. Fourteen (93.3%) of the questionnaire were returned while one (6.7%) questionnaire was not filled. That means the response rate was 93.3%. All questions were responded to except Library and Information Science two questions which seemed to be a problem to the respondents. This was because seven respondents left the two questions blank. In addition, one respondent literally wrote in the spaces provided that she did not understand question 32. In the researcher's opinion, the respondents did not understand these questions. Therefore the researcher was forced to rephrase the two questions to make them simpler and more understandable before the actual data collection.

### **3.9 PROBLEMS ENCOUNTERED**

- The sample was obtained from 13 libraries in Nairobi which proved tedious to the researcher given that she was attending to her normal work duties.
- The researcher lacked scientific training in the research design methodology used in the study.
- Some respondents declined to fill the questionnaire for various reasons such as being too busy, while others were generally unwilling to do so.
- The respondents took a longer period than expected to complete the questionnaire because they complained that the questionnaire was very bulky.

### **3.10 SUMMARY OF THE CHAPTER**

Basically, research methodology outlines issues such as research paradigm, research method, and area of study, target population, data sources, data collection methods and instruments, data analysis and presentation. This chapter presented a detailed account of the strategy and methodology according to which this study was conducted. A pilot study was conducted in only one library, namely JKUAT, and the results could not therefore meet the objectives of the study. The following gap, however, existed in this study: academic librarians holding certificate

qualification did not form part of the study because the researcher believed they could not understand the questionnaire.

The next three chapters attempted to achieve the research objectives by providing and analysing data on the changing roles of academic librarians in the current information age at the University of Nairobi and its college libraries.

## **CHAPTER FOUR: PRESENTATION OF THE FINDINGS**

### **4.1 INTRODUCTION**

This chapter presents the findings obtained from the fieldwork conducted by the researcher at the University of Nairobi. It is worth mentioning that the purpose of the study was to determine the changing roles of academic librarians, in the current information age, at the University of Nairobi and its constituent college libraries, namely: College of Humanities and Social Sciences (CHSS), College of Education and External Studies (CESS), College of Health Sciences (CHS), College of Biological and Physical Sciences (CBPS) and College of Agriculture and Veterinary Sciences (CAVS). The findings are presented in sections:

- 4.2 Results based on the questionnaire
- 4.8 Results based on the structured interviews.

### **4.2 RESULTS BASED ON THE QUESTIONNAIRE**

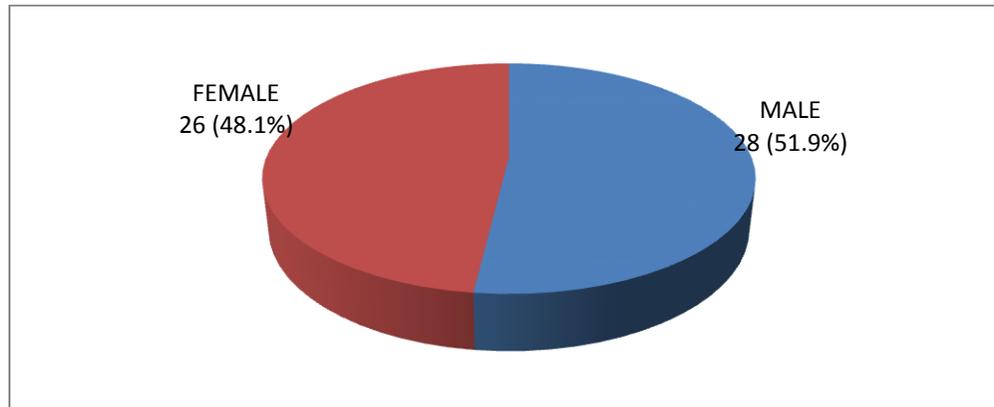
A population of 124 respondents was to be surveyed, however nine (9) librarians declined to fill the questionnaire. Ten (10) library attendants who are certificate holders were excluded from the study, twenty (20) librarians in the 13 libraries were on leave at the time of the study, fifteen (15) librarians were interviewed instead of filling the questionnaire and these were: the library director and three deputies and six college librarians and their deputies, all as indicated in 3.6 bullet 2. The total number of librarians who did not fill the questionnaire was 54. The remaining 70 were surveyed but only 54 returned the questionnaire, thereby accounting for a response rate of 77.1%. Twenty-three (42.6%) of these were from the College of Humanities and Social Sciences (CHSS), 13(24.1%) were from the College of Education and External Studies (CESS), 8(14.8%) were from the College of Health Sciences (CHS), 6(11.1%) were from the College of Biological and Physical Sciences (CBPS) and the remaining 4(7.4%) were from the College of Agriculture and Veterinary Sciences (CAVS).

#### **4.2.1 Respondents' profiles**

The respondents' profile focused on gender, age, job title, professional qualification, number of years worked and experience in the library environment.

#### 4.2.1.1 Gender

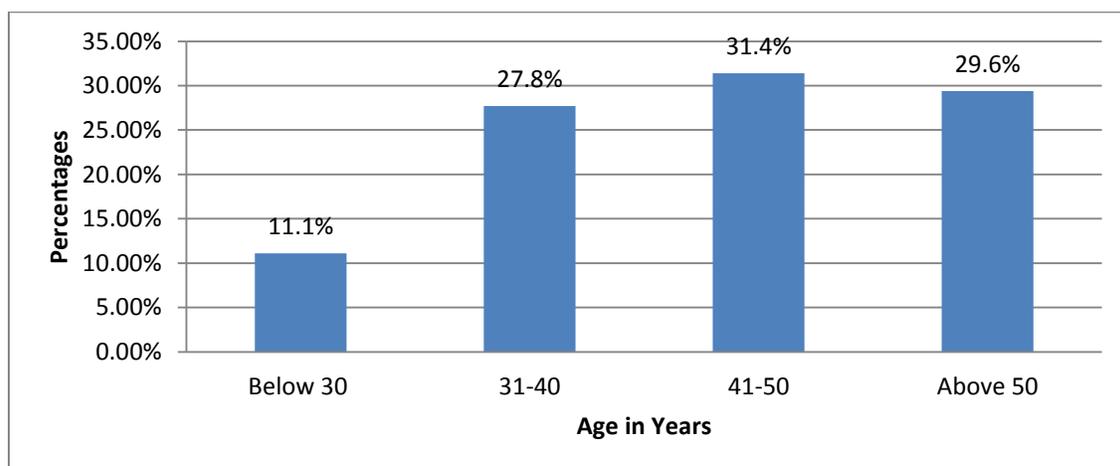
Results from figure 2 on gender show that out of the 54 respondents who responded to the questionnaire 28 (51.9%) were male and 26 (48.1%) were female.



**Figure 2: Gender of the respondents (N=54)**

#### 4.2.1.2 Age

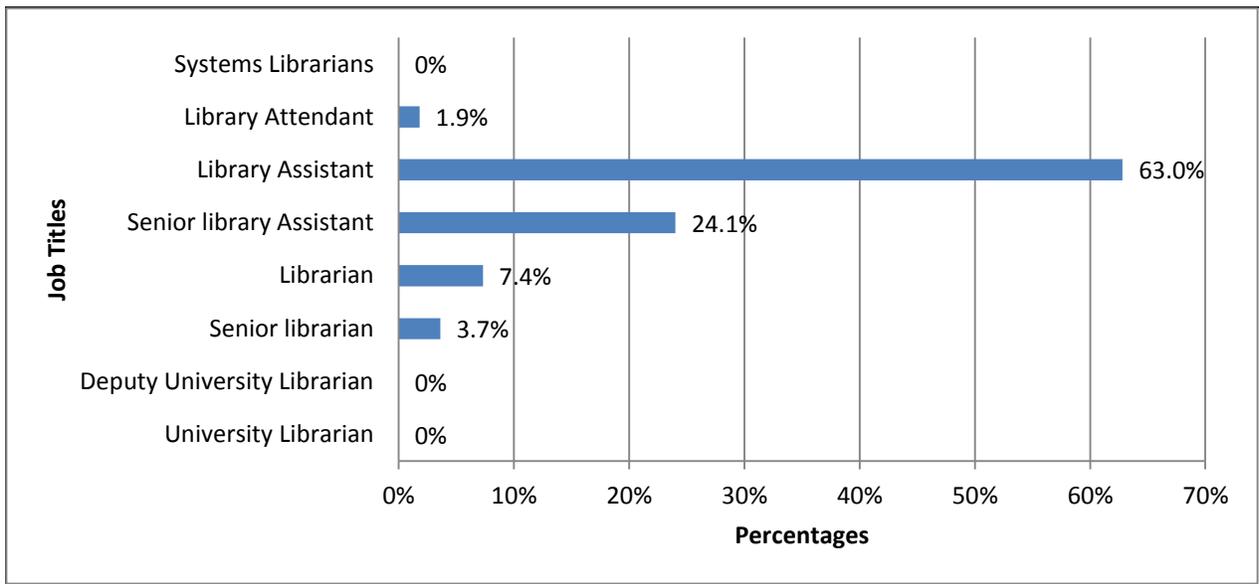
The respondents were asked to indicate their age range. The results as shown in Figure 3 reveal that the majority of the respondents, i.e. 17 (31.5%) were in the age range of 41-50 years followed by those who were in the range of above 50 years (i.e. 16, or 29.6%). Fifteen (27.8%) respondents were in the age range of 31-40 years while the minority of respondents, i.e. 6 (11.1%) were below 30 years of age.



**Figure 3: Age of the respondents (N=54)**

### 4.2.1.3 Job title

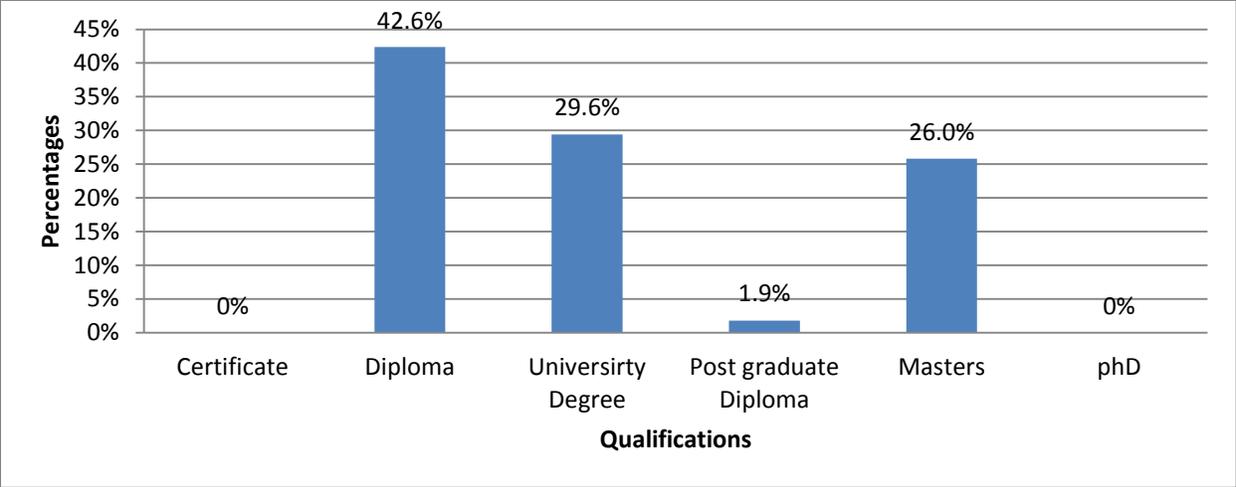
Figure 4 provides the job titles of the respondents. The results showed that the majority of respondents who numbered 34 (63.0%) were library assistants; 13(24.1%) respondents were senior library assistants; 4(7.4%) work as librarians; senior librarians totalled 2(3.7%) while library attendants constituted a minority of 1 (1.9%). From a total of 54 respondents, no one indicated to have a job title of Deputy University Librarian, University Librarian or Systems Librarian.



**Figure 4: Job title of the respondents (N=54)**

### 4.2.1.4 Professional qualification

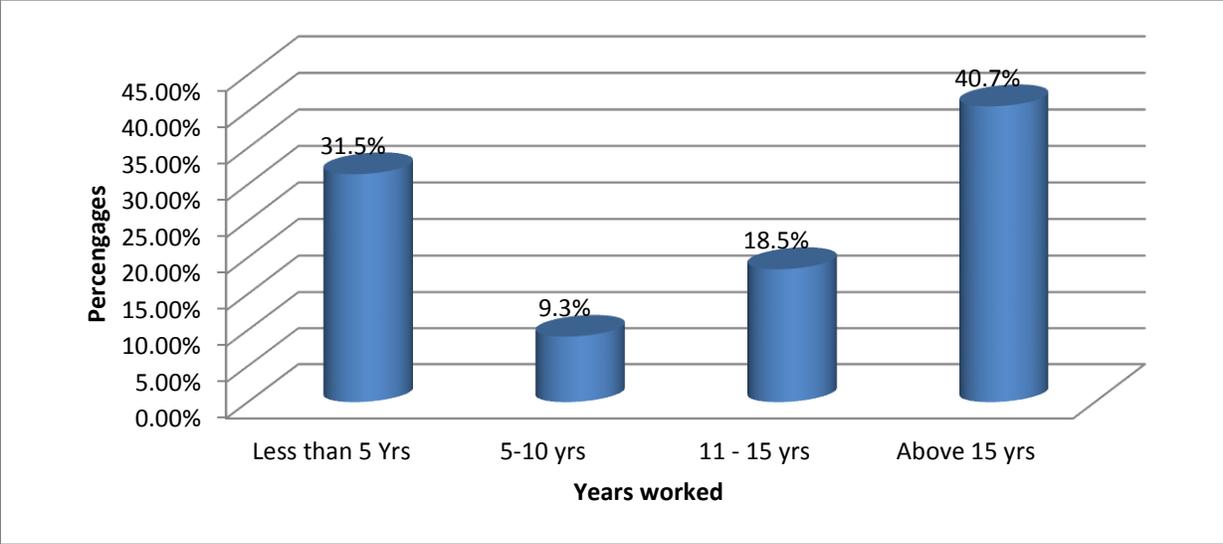
Analysis of results in respect of professional qualification of the respondents' is presented in figure 5. The results show that 23(42.6%) respondents had a diploma as the highest level of qualification. Those with a first university degree were 16(29.6%) while a master's degree was 14(26.0%). A postgraduate diploma in library constituted a minority of 1(1.9%). Of the respondents, no one indicated having acquired a certificate or PhD qualification.



**Figure 5: Professional qualification of the respondents (N=54)**

**4.2.1.5 Years worked**

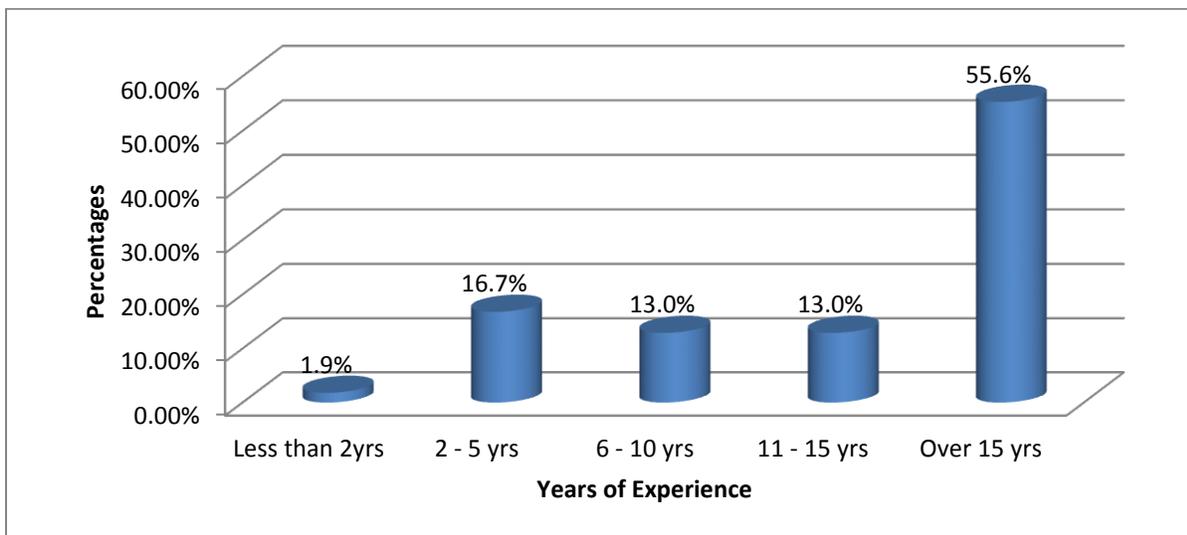
As indicated in question 6 in Appendix I, respondents were asked to indicate the years they have worked in their respective libraries as a way of assessing their work experience. The feedback from the responses shows that the majority numbering 22(40.7%) respondents had worked in the library for over 15 years. This was followed by 17(31.5%) respondents who had worked for less than five years. Ten (18.5%) respondents had worked in the library for between 11 and 15 years while the minority totalling 5 (9.3%) had worked for between five and ten years.



**Figure 6: Years worked in the library (N=54)**

#### 4.2.1.6 Experience in the library environment

Given the emerging trends in the library environment today, experience is required for successful service delivery. The respondents were asked to indicate their experience in the library environment in terms of years they have worked in the sector. The results, shown in figure 7, indicate that most of the respondents who numbered 30(55.6%) had a work experience of over 15 years, followed by 9(16.7%) who had a work experience of between two and five years while 6-10 years and 11-15 years scored 7(13.0%) respectively in each case. The minority, which is 1 (1.9%) person, had a work experience of less than two years.



**Figure 7: Experience in the library environment (N=54)**

### 4.3 CHANGES IN FUNCTIONS AND DUTIES

This section sought to find out the extent to which functions as well as processes and procedures in libraries have changed in view of the current information age.

#### 4.3.1 Information resources available to the respondents at the start of their work

The respondents were asked to indicate which functions, processes as well as procedures were available in the library at the time they first started working in the LIS sector. From all the responses received as shown in table 4, 48(88.9%) respondents indicated that they encountered

manual acquisition of print books, 48(88.9%) indicated that they had manual subscription of journals while a total of 45(83.3%) respondents selected the manual subscription of library newspapers as one of the activities that they found in place when they were first employed in the sector. Manual subscription of periodicals was selected by 41(76.0%) respondents. However, there are those who started working when the same functions were automated but that forms the minority of the respondents. Online acquisition of library books was reported by 11(20.4%) followed by online subscription of journals was also 11(20.4%), while online subscription of newspapers was selected by 4(7.4%).

**Table 3: Information resources available to the respondents at the start of their work (N=54)**

<b>Information resources</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Manual acquisition of print library books	48	88.9
Manual subscription of journals	48	88.9
Manual subscription of library newspapers	45	83.3
Manual subscription of periodicals	41	76.0
Acquisition of CD ROMS	28	51.9
Acquisition of compact disks (CD)	17	31.5
Online subscription of periodicals	12	22.2
Online acquisition of library books	11	20.4
Online subscription of journals	11	20.4
Acquisition of digital books	10	18.5
Online subscription of newspapers	4	7.4

#### **4.3.2 Technical services available to the respondents at the start of their work**

Respondents were also required to indicate the available technical services to them when they first joined the profession as workers. From the responses received as shown in table 5, 52(96.3%) respondents selected manual cataloguing and classification of library materials, 44(81.5%) reported that they had manual indexing of library materials while 43(79.6 %) selected manual abstracting of information materials. Thirteen (24.1%) respondents mentioned that online cataloguing and classification of library materials was present, while 6(11.1%) selected

online indexing of library materials while the minority numbering 4(7.4%) indicated that they had encountered online abstracting of information materials as they joined the profession.

**Table 4: Technical services available to the respondents at the start of their work (N=54)**

Technical services	Frequency	Percentage (%)
Manual cataloguing and classification of library materials	52	96.3
Manual indexing of library materials	44	81.5
Manual abstracting of information materials	43	79.6
Online cataloguing and classification of library materials	13	24.1
Online indexing of library materials	6	11.1
Online abstracting of information materials	4	7.4

#### **4.3.3 Library services available to the respondents at the start of their work**

Respondents were also asked to provide information about the available library services that they encountered when they were first employed in the sector. As reflected in Table 6, registration and identification of library users and lending and returning of information materials received the highest response rate from the respondents in that all the respondents (i.e. 54 or 100.0%) indicated that the services were available when they were first employed. Fifty-three (98.1%) respondents indicated that they had an interlibrary loan service while 49 (90.7%) revealed that a manual catalogue was in existence when they were first employed in the sector. Face-to-face reference and user education were selected by 48(88.9%) and 46(85.2%) respondents respectively. Forty-five (83.3%) respondents said that manual stocktaking was present while only 2(3.7%) pointed out electronic weeding of information.

**Table 5: Library services available to the respondents at the start of their work (N=54)**

Library services	Frequency	Percentage (%)
Registration and identification of library users	54	100.0
Lending and returning of information materials	54	100.0
Inter-library loan service	53	98.1
Manual catalogue	49	90.7
Face-to-face reference	48	88.9
User education	46	85.2
Manual weeding of information materials	46	85.2
Manual stock taking	45	83.3
Current awareness service (CAS)	43	79.6
Reservation/recall service	40	74.1
Marketing of library resources	33	61.1
Selective dissemination of information	30	55.6
Information literacy	26	48.1
Bibliographic instruction	26	48.1
Ask the librarian service	23	42.6
Searching of electronic databases	16	29.6
E-mail service	15	27.8
Online public access catalogue (OPAC)	15	27.8
Online reference services	15	27.8
Online searches	14	26.0
Internet training to library users	11	20.4
Electronic stock taking	7	13.0
Instant messaging to library users	5	9.3
LinkedIn service	3	5.6
Electronic weeding of information materials	2	3.7

#### 4.3.4 Library functions that have been discontinued in the library

Respondents were asked to indicate the library functions that have been discontinued in their libraries. Feedback from the respondents shows that 40(74.1%) pointed to manual subscription of journals; 33(61.1%) selected manual subscription of periodicals while 27(50.0%) indicated that the acquisition of compact disks has been discontinued. Twenty-three (42.6%) respondents reported that CD ROMS no longer exist in their libraries while 18(33.3%) respondents selected the manual acquisition of print library books. Of all the respondents, no one selected online

acquisition of library books, acquisition of digital books, manual subscription of library newspapers and online subscription of periodicals.

**Table 6: Library functions that have been discontinued in the library (N=54)**

<b>Information resources</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Manual subscription of journals	40	74.1
Manual subscription of periodicals	33	61.1
Acquisition of compact disks (CD)	27	50.0
Acquisition of CD ROMS	23	42.6
Manual acquisition of print library books	18	33.3
Online subscription of journals	5	9.3
Online subscription of newspapers	4	7.4
Online acquisition of library books	0	0.0
Acquisition of digital books	0	0.0
Manual subscription of library newspapers	0	0.0
Online subscription of periodicals	0	0.0

#### **4.3.5 Technical services that have been discontinued in the library**

Respondents were asked to indicate which technical services have been discontinued in their libraries. As indicated in table 8, 42(77.8%) respondents named the manual cataloguing and classification of library materials, 37 (68.5%) respondents selected the manual indexing while 35 (64.8%) said that manual abstracting of information materials has been discontinued. A further 2(3.7%) respondents pointed out the online cataloguing and classification of library materials while the minority, numbering 1(1.9%) respondent, indicated that online abstracting of information materials has been discontinued. No one selected online indexing of library materials.

**Table 7: Technical services that have been discontinued in the library (N=54)**

<b>Technical services</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Manual cataloguing and classification of library materials	42	77.8
Manual indexing of library materials	37	68.5
Manual abstracting of information materials	35	64.8
Online cataloguing and classification of library materials	2	3.7
Online abstracting of information materials	1	1.9
Online indexing of library materials	0	0.0

#### **4.3.6 Library services which have been discontinued**

The study sought to know which library services have been discontinued. Results are presented in table 9. Forty-six (85.2%) respondents said that the use of a manual catalogue has been discontinued and replaced with an online public access catalogue. Also discontinued was manual stocktaking which was reported by 33 (61.1%) respondents. Respondents were asked if there was any other service that has been discontinued but was not provided in the questionnaire, to which the following were listed: manual taking of statistics which is now done electronically.

#### **4.3.7 Change of library functions/services over time**

As indicated in table 10, respondents were asked to indicate their level of agreement to the statement on whether library functions/services have changed overtime. Feedback from the responses shows that 35(64.8%) strongly agreed that access to the catalogue has changed overtime. Thirty-three (61.1%) respondents also strongly agreed that literature searches for clients have changed over time, the current awareness service had also changed according to 27(50.0%) respondents while acquisition 26(48.1%), cataloguing 26(48.1%) and charging and discharging 26(48.1%) had also changed over time. Thirty-one (57.4%) respondents agreed that classification and information literacy have also changed over time. A total of 14(26.0%) respondents were undecided on whether weeding of materials had really changed. Fourteen (26.0%) disagreed that weeding of materials had changed while 3(5.6%) strongly disagreed that bibliographic instruction has changed overtime.

**Table 8: Library services which have been discontinued (N=54)**

<b>Library services</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Manual catalogue	46	85.2
Manual stock taking	33	61.1
Interlibrary loan service	8	14.8
Bibliographic instruction	8	14.8
Manual weeding of information materials	7	13.0
Face-to-face reference	3	5.6
Reservation/recall service	3	5.6
Selective dissemination of information	3	5.6
Information literacy	2	3.7
User education	2	3.7
Internet training to library users	1	1.9
Current awareness service (CAS)	1	1.9
Marketing of library resources	1	1.9
Registration and identification of library users	0	0.0
Lending and returning of information materials	0	0.0
E-mail service	0	0.0
Online searches	0	0.0
Online public access catalogue (OPAC)	0	0.0
Online reference services	0	0.0
Searching of electronic databases	0	0.0
Instant messaging to library users	0	0.0
LinkedIn service	0	0.0
Electronic stock taking	0	0.0
Electronic weeding of Information materials	0	0.0
Ask the librarian service	0	0.0

**Table 9: Whether or not library functions/services have changed over time (N=54)**

Key: SA-Strongly Agree A-Agree UD-Undecided D-Disagree SD-Strongly Disagree

Function/ service	SA (5)		A (4)		UD (3)		D (2)		SD (1)	
	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)
Acquisition	26	48.1	25	46.3	2	3.7	1	1.9	0	0.0
Cataloguing	26	48.1	25	46.3	1	1.9	2	3.7	0	0.0
Classification	20	37.0	31	57.4	1	1.9	2	3.7	0	0.0
Indexing	16	29.6	24	44.4	10	18.5	2	3.7	1	1.9
Abstracting	15	27.8	24	44.4	10	18.5	2	3.7	2	3.7
Access to catalogue	35	64.8	18	33.3	0	0.0	1	1.9	0	0.0
Reference services	18	33.3	28	51.9	3	5.6	5	9.3	0	0.0
Information literacy	19	35.2	31	57.4	2	3.7	2	3.7	0	0.0
Registration & identification of users	26	48.1	26	48.1	0	0.0	2	3.7	0	0.0
User education	17	31.5	28	51.9	2	3.7	7	13.0	0	0.0
Charging & discharging	26	48.1	27	50.0	1	1.9	0	0.0	0	0.0
Interlibrary loan	7	13.0	28	51.9	10	18.5	8	14.8	0	0.0
Reservation/recall service	16	29.6	26	48.1	8	14.8	4	7.4	0	0.0
Stocktaking	11	20.4	25	46.3	8	14.8	10	18.5	0	0.0
Weeding of materials	6	11.1	13	24.1	14	26.0	17	31.5	1	1.9
Bibliographic instruction	12	22.2	18	33.3	9	16.7	3	5.6	3	5.6
Literature searches for clients	33	61.1	17	31.5	4	7.4	0	0.0	0	0.0
Library orientation	25	46.3	20	37.0	2	3.7	6	11.1	0	0.0
Current awareness service	27	50.0	18	33.3	6	11.1	3	5.6	0	0.0
Selective dissemination of information	21	38.9	18	33.3	11	20.4	4	7.4	0	0.0
Marketing of library resources	23	42.6	23	42.6	6	11.1	1	1.9	0	0.0

**4.3.8 Extent to which library functions have changed in the last ten years**

Respondents were asked to indicate the extent to which library functions/services have changed in the last ten years. As reflected in Table 11, the majority of 33(61.1%) indicated access to the catalogue has changed to a very great extent. The other functions/services that have changed to a very great extent include: registration and identification of users 32 (59.3%), literature searches for clients 29 (53.7%) and charging and discharging 28(51.9%). Thirty (55.6%) respondents believe that classification has also changed to a great extent while 24(44.4%) indicated that bibliographic instruction has changed to some extent. Sixteen (29.6%) respondents indicated interlibrary loan has changed to little extent while 19(35.2%) respondents indicated that weeding of materials has changed to a very little extent.

**Table 10: Extent to which library functions have changed in the last 10 years (N=54)**

Key: VGE - Very Great Extent GE - Great Extent SE - Some Extent LE - Little Extent VLE - Very Little Extent

Function/ service	VGE (5)		GE (4)		SE (3)		LE (2)		VLE (1)	
	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)
Acquisition	11	20.4	21	38.9	14	26.0	2	3.7	0	0.0
Cataloguing	22	40.7	26	48.1	3	5.6	2	3.7	1	1.9
Classification	14	26.0	30	55.6	6	11.1	3	5.6	1	1.9
Indexing	10	18.5	17	31.5	14	26.0	6	11.1	7	13.0
Abstracting	11	20.4	16	29.6	12	22.2	9	16.7	6	11.1
Access to catalogue	33	61.1	18	33.3	4	7.4	0	0.0	0	0.0
Reference services	15	27.8	23	42.6	11	20.4	5	9.3	0	0.0
Information literacy	19	35.2	21	38.9	10	18.5	3	5.6	1	1.9
Registration & identification of users	32	59.3	15	27.8	6	11.1	1	1.9	0	0.0
User education	20	37.0	20	37.0	14	26.0	0	0.0	0	0.0
Charging & discharging	28	51.9	22	40.7	4	7.4	0	0.0	0	0.0
Interlibrary loan	9	16.7	5	9.3	18	33.3	16	29.6	6	11.1
Reservation/recall service	10	18.5	9	16.7	19	35.2	10	18.5	6	11.1
Stocktaking	8	14.8	5	9.3	21	38.9	11	20.4	9	16.7
Weeding of materials	4	7.4	2	3.7	14	26.0	15	27.8	19	35.2
Bibliographic instruction	8	14.8	7	13.0	24	44.4	10	18.5	5	9.3
Literature searches for clients	29	53.7	16	29.6	8	14.8	0	0.0	1	1.9
Library orientation	14	26.0	21	38.9	7	13.0	10	18.5	2	3.7
Current awareness Service	13	24.1	18	33.3	16	29.6	4	7.4	3	5.6
Selective dissemination of Information	10	18.5	16	29.6	13	24.1	12	22.2	3	5.6
Marketing of library resources	20	37.0	13	24.1	10	18.5	4	7.4	1	1.9

#### **4.3.9 Increase or decrease in responsibility over the last ten years in terms of functions performed in the library**

Respondents were requested to indicate whether their responsibilities have increased or decreased over the last ten years in terms of functions performed in the library. The purpose of asking the question was to assess how the said functions/services have changed over time. Results in table 12 shows 34(63.0%) respondents indicated that online searches have greatly increased. Eighteen (33.3%) respondents believe that acquisition and bibliographic instruction have somewhat increased. Twenty (37.0%) respondents indicated that weeding of materials has not changed, 23(42.6%) respondents selected interlibrary loan as an activity that has somewhat decreased while 16(29.6%) respondents believe that stocktaking and indexing have greatly decreased. Other functions/services that have greatly decreased in terms of volume include:

abstracting 20(37.0%), cataloguing 12(22.2%) and classification 12(22.2%). The services/functions that have also somewhat increased in terms of volume of workload include: information literacy 14 (26.0%) and library orientation 13 (24.1%), cataloguing 12(22.2%) and classification 12(22.2%).

**Table 11: Increase or decrease in responsibility over the last ten years in terms of functions performed in the library (N=54)**

**Key: GI - Greatly Increased SI - Somewhat Increased NO - No Change SD - Somewhat Decreased GD - Greatly Decreased N/A - Not Applicable**

Function/service	GI (6)		SI (5)		NO (4)		SD (3)		GD (2)		N/A (1)	
	F	P (%)	F	P (%)								
Acquisition	13	24.1	18	33.3	3	5.6	11	20.4	8	14.8	1	1.9
Cataloguing	12	22.2	12	22.2	2	3.7	15	27.8	12	22.2	1	1.9
Classification	12	22.2	12	22.2	2	3.7	15	27.8	12	22.2	1	1.9
Indexing	3	5.6	8	14.8	11	20.4	10	18.5	16	29.6	6	11.1
Abstracting	2	3.7	9	16.7	1	1.9	11	20.4	13	24.1	7	13.0
Access to catalogue	28	51.9	5	9.3	4	7.4	5	9.3	9	16.7	3	5.6
Reference services	22	40.7	11	20.4	4	7.4	8	14.8	7	13.0	2	3.7
Information literacy	25	46.3	14	26.0	3	5.6	8	14.8	3	5.6	1	1.9
Registration & identification of users	20	37.0	10	18.5	4	7.4	8	14.8	11	20.4	1	1.9
User education	27	50.0	12	22.2	3	5.6	8	14.8	2	3.7	2	3.7
Charging & discharging	17	31.5	9	16.7	3	5.6	10	18.5	10	18.5	5	9.3
Interlibrary loan	2	3.7	6	11.1	9	16.7	23	42.6	8	14.8	6	11.1
Reservation/recall service	4	7.4	8	14.8	12	22.2	21	38.9	8	14.8	1	1.9
Stocktaking	3	5.6	6	11.1	11	20.4	13	24.1	16	29.6	5	9.3
Weeding of materials	2	3.7	10	18.5	20	37.0	7	13.0	9	16.7	6	11.1
Bibliographic instruction	7	13.0	18	33.3	6	11.1	14	26.0	7	13.0	2	3.7
Literature searches for clients	25	46.3	11	20.4	4	7.4	5	9.3	8	14.8	1	1.9
Library orientation	27	50.0	13	24.1	8	14.8	5	9.3	0	0.0	1	1.9
Current awareness service	21	38.9	11	20.4	8	14.8	9	16.7	3	5.6	2	3.7
Selective dissemination of information	21	38.9	6	11.1	13	24.1	11	20.4	4	7.4	3	5.6
Marketing of library resources	25	46.3	8	14.8	8	14.8	9	16.7	3	5.6	1	1.9
Ask the librarian service	16	29.6	12	22.2	6	11.1	14	26.0	1	1.9	5	9.3
Instant messaging to users	26	48.1	9	16.7	6	11.1	5	9.3	4	7.4	4	7.4
Internet training of library users	26	48.1	9	16.7	6	11.1	6	11.1	3	5.6	4	7.4
Use of e-mails	30	55.6	12	22.2	1	1.9	6	11.1	2	3.7	3	5.6
Online searches	34	63.0	10	18.5	2	3.7	6	11.1	1	1.9	1	1.9

#### 4.3.10 Complexity of duties/responsibilities over the last ten years

As indicated in table 13, respondents were further asked to select the statements that reflect the level of complexity of duties/responsibilities over the last ten years. In other words, respondents were asked to state whether or not their duties/responsibilities have become more or less complex. Feedback from the responses shows that 19(35.2%) of the respondents indicated that responsibilities were not complex while 17(31.5%) indicated that duties/responsibilities have become somewhat complex when compared to the past. Ten (18.5%) respondents agreed duties/responsibilities were complex while 8(14.8%) believe that duties/responsibilities have become very complex. None of the respondents was undecided.

**Table 12: Complexity of duties/responsibilities over the last ten years (N=54)**

<b>Complexity of duties and/or responsibilities over the last years</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Not complex	19	35.2
Somewhat complex	17	31.5
Complex	10	18.5
Very complex	8	14.8
Undecided	0	0.0

#### 4.3.11 Time spent on discharging duties and/or responsibilities

Respondents were asked to state the approximate time spent on discharging duties and/or responsibilities. The majority, 36(66.7%), indicated that they spend less time discharging their duties/responsibilities, 15(27.8%) felt that more time was spent discharging duties, 1(1.9%) respondent was undecided while another 1(1.9%) did not know whether or not the she/he spent more or less time discharging his/her duties.

**Table 13: Time spent on discharging duties and/or responsibilities (N=54)**

<b>Time spent on discharging duties and/or responsibilities</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Less time	36	66.7
More time	15	27.8
Undecided	1	1.9
Don't know	1	1.9

#### 4.3.12 Time needed by librarians to execute their duties/responsibilities

A follow up question was asked to gauge whether the respondents would require more or less time to execute their duties/responsibilities. Table 15 shows that 29(53.7%) respondents stated that they needed more time, 21(38.9%) believed that they needed less time, 2(3.7%) were undecided and 2(3.7%) did not know whether or not they needed less or more time to discharge their duties/responsibilities.

**Table 14: Time required by librarians to execute their duties/responsibilities (N=54)**

<b>Time required by librarians to execute their duties/responsibilities</b>	<b>Frequency</b>	<b>Percentage (%)</b>
More time	29	53.7
Less time	21	38.9
Undecided	2	3.7
Don't know	2	3.7

#### 4.4 COMPETENCIES AND SKILLS REQUIRED IN THE INFORMATION AGE

This section sought to examine the competencies and skills required of librarians in the current information age

##### 4.4.1 The most valuable competencies before the introduction of ICTs

In this section, respondents were requested to select the most valuable competencies that were required before the introduction of ICTs in their libraries or in the profession. Most respondents, 51 (94.4), indicated that organization of recorded knowledge and information was the most valuable competency followed by knowledge of information resources which was selected by 48(88.9%) respondents and foundations of the profession 42(77.8%).A total of 40(74.1%) respondents stated that competencies in the area of reference and user services were most valuable while 18(33.3%) felt that research was a valuable competency required prior to the introduction of ICTs.

**Table 15: The most valuable competencies before the introduction of ICTs (N=54)**

Competencies	Frequency	Percentage (%)
Organization of recorded knowledge and information	51	94.4
Knowledge of information resources	48	88.9
Foundations of the profession	42	77.8
Reference and user services	40	74.1
Administration and management	32	59.3
Continuing education and lifelong learning	22	40.7
Technological knowledge and skills	21	38.9
Research	18	33.3

**Table 16: Most valuable skills before introduction of ICTs (N=54)**

Skills	Frequency	Percentage (%)
Communication skills	51	94.4
Information retrieval skills	45	83.3
Bibliographic (cataloguing & classification skills)	41	76.0
Listening skills	40	74.1
Decision making skills	40	74.1
Problem solving skills	37	68.5
Management skills	36	66.7
Leadership skills	33	61.1
Budgeting skills	33	61.1
Marketing skills	26	48.1
Evaluative skills	26	48.1
Library management system skills	23	42.6
Basic computer skills	17	31.5
Emailing skills	14	26.0
Internet skills	12	22.2
Metadata skills	6	11.1

#### **4.4.2 Most valuable skills before introduction of ICTs**

Respondents were further asked to state what they considered as the most valuable skills before the introduction of ICTs. Table 17 shows that the majority of respondents, 51(94.4%), indicated that communication skills was the most valuable skill before the introduction of ICTs in libraries, followed by 45(83.3%) respondents who selected information retrieval skills, 41(76.0%) who chose cataloguing and classification skills, 40(74.1%) who felt that listening skills were the most valuable skills while 40(74.1%) respondents selected decision making skills. It was not surprising to note that 6 (11.1%) respondents indicated that metadata skills were the least valuable skills prior to the introduction of ICTs.

#### **4.4.3 Competencies and skills that have become increasingly important after the introduction of ICTs in libraries**

Respondents were asked to state the competencies and/or skills that have become increasingly important especially after the introduction of ICTs in libraries. Results show that most respondents, numbering 45 (83.3%), felt that technological knowledge has become increasingly important in the library, 45(83.3%) respondents chose basic computer skills, 44(81.5%) selected internet skills, while 28(51.9%) respondents believed that reference and user services have become important in library. A total of 28(51.9%) respondents selected administration and management skills as the skills that have become important in libraries while 10 (18.5%) chose listening skills as slightly important. Five (9.2%) respondents felt that skills associated with the knowledge of the foundations of the profession are not important.

**Table 17: Competencies and skills that have become increasingly important after the introduction of ICTs in libraries (N=54)**

**Key: VI-Very important I-Important SI-Slightly important UD-Undecided NI-Not important**

Competencies and skills	VI (5)		I (4)		SI (3)		UD (2)		NI (1)		DK	
	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)
Foundations of the profession	18	33.3	19	35.2	5	9.3	4	7.4	5	9.3	3	5.6
Knowledge of information resources	34	63.0	17	31.5	2	3.7	1	1.9	0	0.0	0	0.0
Organization of recorded knowledge and information	37	68.5	12	22.2	3	5.6	1	1.9	1	1.9	0	0.0
Technological knowledge and skills	45	83.3	5	9.3	4	7.4	0	0.0	0	0.0	0	0.0
Reference and user services	19	35.2	28	51.9	4	7.4	2	3.7	1	1.9	0	0.0
Research	29	53.7	17	31.5	4	7.4	3	5.6	1	1.9	0	0.0
Continuing education and lifelong learning	25	46.3	20	37.0	4	7.4	3	5.6	2	3.7	0	0.0
Administration and management	18	33.3	28	51.9	7	13.0	1	1.9	0	0.0	0	0.0
Information retrieval skills	38	70.4	14	26.0	2	3.7	0	0.0	0	0.0	0	0.0
Communication skills	33	61.1	18	33.3	3	5.6	0	0.0	0	0.0	0	0.0
Listening skills	26	48.1	9	16.7	10	18.5	3	5.6	3	5.6	3	5.6
Basic computer skills	45	83.3	8	14.8	1	1.9	0	0.0	0	0.0	0	0.0
Emailing skills	36	66.7	16	29.6	1	1.9	0	0.0	0	0.0	0	0.0
Marketing skills	27	50.0	22	40.7	4	7.4	1	1.9	0	0.0	0	0.0
Leadership skills	27	50.0	21	38.9	4	7.4	2	3.7	0	0.0	0	0.0
Problem solving skills	23	42.6	20	37.0	8	14.8	3	5.6	0	0.0	0	0.0
Decision making skills	28	51.9	20	37.0	5	9.3	1	1.9	0	0.0	0	0.0
Budgeting skills	27	50.0	20	37.0	6	11.1	1	1.9	0	0.0	0	0.0
Management skills	25	46.3	22	40.7	5	9.3	2	3.7	0	0.0	0	0.0
Internet skills	44	81.5	8	14.8	1	1.9	1	1.9	0	0.0	0	0.0
Metadata skills	39	72.2	12	22.2	2	3.7	1	1.9	0	0.0	0	0.0
Library management system skills	31	57.4	13	24.1	7	13.0	2	3.7	1	1.9	0	0.0
Bibliographic (cataloguing & classification skills)	38	70.4	11	20.4	3	5.6	1	1.9	0	0.0	0	0.0
Evaluative skills	28	51.9	21	38.9	5	9.3	0	0.0	0	0.0	0	0.0

#### **4.4.4 Extent to which various competencies and skills have improved service provision in libraries**

Respondents were asked to indicate the extent to which the various competencies and skills have improved service provision in libraries. As reflected in table 19, the majority of the respondents, 44(81.5%), indicated that internet skills have, to a very great extent, improved service provision in the library; 26(48.1%) respondents felt that problem solving skills have, to a great extent, improved service delivery; 20(37.0%) respondents selected administration and management skills as being among those that have improved service provision to some extent while 7(13.0%) selected decision making skills as having improved the services to a little extent.

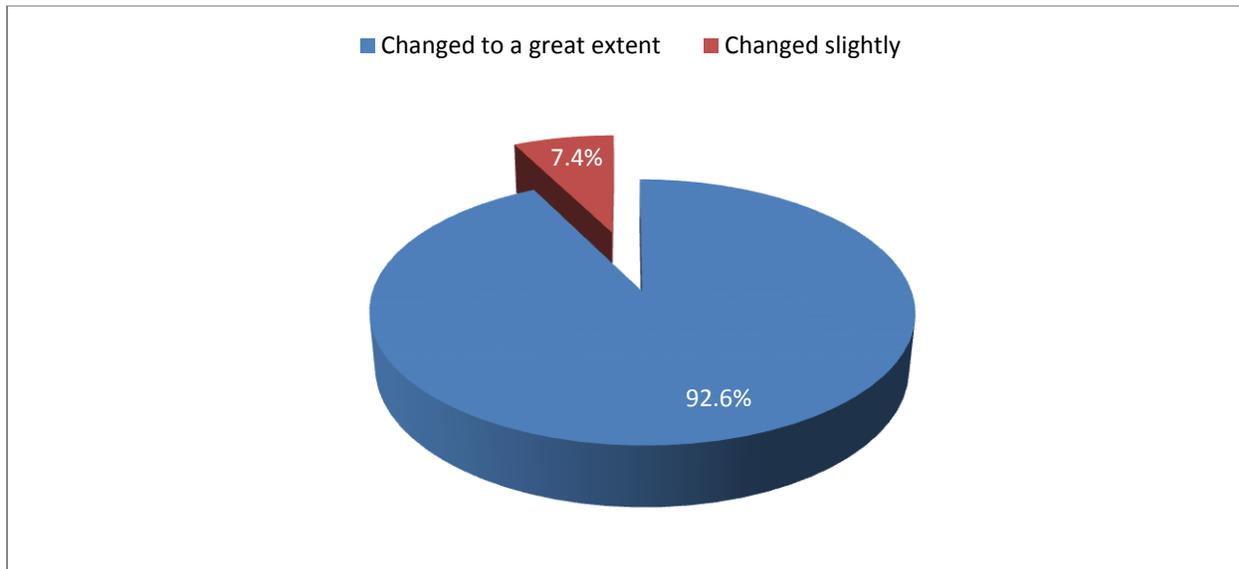
**Table 18: Extent to which various competencies and skills have improved service provision in libraries (N=54)**

**Key: VGE- Very great extent GE-Great extent SE-Some extent LE- Little extent VLE-Very little extent**

	VGE (5)		GE (4)		SE (3)		LE (2)		VLE (1)		DK	
	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)
Foundations of the profession	18	33.3	16	29.6	14	26.0	2	3.7	2	3.7	2	3.7
Knowledge of information resources	26	48.1	23	42.6	5	9.3	0	0.0	0	0.0	0	0.0
Organization of recorded knowledge and information	25	46.3	16	29.6	3	5.6	0	0.0	0	0.0	0	0.0
Technological knowledge and skills	36	66.7	14	26.0	3	5.6	1	1.9	0	0.0	0	0.0
Reference and user services	18	33.3	25	46.3	10	18.5	1	1.9	0	0.0	0	0.0
Research	31	57.4	18	33.3	5	9.3	0	0.0	2	3.7	0	0.0
Continuing education and lifelong learning	16	29.6	24	44.4	12	22.2	2	3.7	0	0.0	0	0.0
Administration and management	14	26.0	18	33.3	20	37.0	0	0.0	1	1.9	1	1.9
Information retrieval skills	31	57.4	18	33.3	3	5.6	1	1.9	0	0.0	1	1.9
Communication skills	24	44.4	16	29.6	13	24.1	0	0.0	0	0.0	1	1.9
Listening skills	14	26.0	16	29.6	19	35.2	2	3.7	2	3.7	1	1.9
Basic computer skills	39	72.2	12	22.2	3	5.6	0	0.0	0	0.0	0	0.0
Emailing skills	36	66.7	13	24.1	4	7.4	1	1.9	0	0.0	0	0.0
Marketing skills	21	38.9	20	37.0	11	20.4	1	1.9	0	0.0	1	1.9
Leadership skills	16	29.6	20	37.0	10	18.5	6	11.1	0	0.0	2	3.7
Problem solving skills	18	33.3	26	48.1	7	13.0	0	0.0	1	1.9	2	3.7
Decision making skills	12	22.2	23	42.6	10	18.5	7	13.0	1	1.9	1	1.9
Budgeting skills	17	31.5	21	38.9	10	18.5	5	9.3	0	0.0	1	1.9
Management skills	20	37.0	13	24.1	18	33.3	1	1.9	1	1.9	1	1.9
Internet skills	44	81.5	9	16.7	1	1.9	0	0.0	0	0.0	0	0.0
Metadata skills	31	57.4	12	22.2	10	18.5	0	0.0	0	0.0	1	1.9
Library management system skills	29	53.7	15	27.8	9	16.7	0	0.0	1	1.9	0	0.0
Bibliographic (cataloguing & classification skills)	29	53.7	20	37.0	5	9.3	0	0.0	0	0.0	0	0.0
Evaluative skills	15	27.8	25	46.3	12	22.2	0	0.0	0	0.0	0	0.0

Figure 8 provides responses to the question on whether or not the competencies and skills of librarians have changed with the introduction of ICTs in the library. The majority, numbering 50 (92.6%) indicated that the competencies and skills have changed to a great extent; 4(7.4%) indicated it had changed slightly.

#### 4.4.5 Change of competencies and skills before and after introduction of ICTS



**Figure 8: A comparison of competencies and skills before and after introduction of ICTS (N=54)**

#### 4.4.6 Skills needed in libraries for effective service provision

Respondents were asked to indicate the skills that are needed in libraries for effective service provision. Table 20 reveals that all respondents indicated that information retrieval skills 54 (100.0%) were the most needed skills followed by basic computer skills (52 or 96.3%), emailing (49 or 90.7%), and information literacy (48 or 88.9%), internet skills (48 or 88.9%) and cataloguing and classification (45 or 83.3%). The minority who numbered 29(53.7%) believed that evaluative skills were the least needed skill for effective service provision.

**Table 19: Skills needed in libraries for effective service provision (N=54)**

	<b>Frequency</b>	<b>Percentage (%)</b>
Information retrieval skills	54	100.0
Basic computer skills	52	96.3
Emailing skills	49	90.7
Internet skills	48	88.9
Information literacy skills	48	88.9
Bibliographic (cataloguing & classification skills)	45	83.3
Communication skills	42	77.8
Metadata skills	42	77.8
Library management system skills	42	77.8
Management skills	41	76.0
Problem solving skills	36	66.7
Decision making skills	36	66.7
Marketing skills	34	63.0
Budgeting skills	31	57.4
Listening skills	30	55.6
Evaluative skills	29	53.7
Leadership skills	25	46.3

#### **4.5 EFFECTS OF ICTS ON THE ROLES OF LIBRARIANS**

This section sought to find out the effect of ICTs on the roles of librarians in the information age.

##### **4.5.1 Awareness of information technology available in the library**

Respondents were asked whether or not they were aware of the information and communication technologies available in their libraries. All respondents 54(100.0%) indicated that they were indeed aware.

##### **4.5.2 Availability of ICTs in the respondents' library over time**

A follow up question was posed to find out the type of ICTs available in the libraries. Table 21a provides the results, which show that the highest responses were recorded in the period 1991-2000 wherein the CD ROMS was the main technology available in libraries. A total of 40(74.1%) selected CDROMs. This was followed by compact disks (38 or 70.4%) and

computers (28 or 51.9%). The least available ICTs were Library Management Software, electronic journals, electronic books, library online databases, online user education/tutorials, Digital Repository, Online Searching, library websites, electronic libraries, electronic/virtual reference services and electronic document delivery.

**Table 20a: Availability of ICTs in the respondents' library over time 1991-2000 (N=54)**

ICT	1991-2000	
	Frequency	Percentage (%)
CD ROMs	40	74.1
Compact disks (CDs)	38	70.4
Computers	28	51.9
Internet	15	27.8
Email	10	18.5
Online Public Access Catalogue (OPAC)	7	13.0
Online library cooperation and resource sharing	2	3.7
Social media networks	2	3.7
Library Management Software	1	1.9
Electronic journals	1	1.9
Electronic books	1	1.9
Library online databases	1	1.9
Online user education/tutorials	1	1.9
Digital repository	1	1.9
Online searching	1	1.9
Library websites	1	1.9
Electronic libraries	1	1.9
Electronic/virtual reference services	1	1.9
Electronic document delivery	1	1.9

**Table 20b: Availability of ICTs in the respondents' library over time 2001-2010 (N=54)**

ICT	2001-2010	
	Frequency	Percentage (%)
Library Management Software	51	94.4
Internet	49	90.7
Email	49	90.7
Online Public Access Catalogue (OPAC)	49	90.7
Computers	48	88.9
Electronic journals	47	87.0
Library online databases	45	83.3
Electronic books	44	81.5
Online library cooperation and resource sharing	42	77.8
Library websites	42	77.8
Electronic libraries	37	77.8
Online searching	39	72.2
Online user education/tutorials	39	72.2
Electronic/virtual reference services	35	64.8
Electronic document delivery	33	61.1
Compact disks (CDs)	28	51.9
CD ROMs	26	48.1
Social media networks	25	46.3
Digital repository	17	31.5

Table 20b provides results which show that between 2001 and 2010 the highest responses were recorded for library management software (51 or 94.4%), the internet (49 or 90.7%), email (49 or 90.7%) and OPAC (49 or 90.7%). The least was digital repository, which was selected by 17(31.5%) respondents.

**Table 20c: Availability of ICTs in the respondents' library over time 2011-2013 (N=54)**

ICT	2011-2013	
	Frequency	Percentage (%)
Library online databases	53	98.1
Library websites	53	98.1
Electronic document delivery	53	98.1
Electronic books	53	98.1
Library Management Software	52	96.3
Electronic journals	52	96.3
Digital repository	52	96.3
Electronic libraries	51	94.4
Social media networks	50	92.6
Online searching	50	92.6
Internet	49	90.7
Email	49	90.7
Online user education/tutorials	49	90.7
Online library cooperation and resource sharing	49	90.7
Computers	48	88.9
Electronic/virtual reference services	48	88.9
Online Public Access Catalogue (OPAC)	46	85.2
Compact disks (CDs)	23	42.6
CD ROMs	21	38.9

Table 20c provides results, which show that between 2011 and 2013 the highest number of responses was recorded for electronic books (53 or 98.1), library online databases (53 or 98.1), library websites (53 or 98.1%), and electronic document delivery (53 or 98.1%). Some of the less available ICTs in this period included CD ROMs, which was selected by 21 (38.9%) of the respondents and computer discs (CDs) which was selected by 23(42.6%).

#### **4.5.3 The importance of ICTs in enabling efficient service delivery in libraries**

The study further sought to find out from the respondents about the ratings of ICTs in terms of their importance in enabling efficient service delivery in the library. As the results in Table 22 reveal, all 54(100.0%) respondents indicated that computers and the internet were very important. This was followed closely by online public access catalogue 51(94.4%), online

searching 49 (90.7%), electronic journals 48(88.9%), digital repository 48(88.9%), and library online databases 48(88.9%) which respondents felt were also very important. Other very important ICTs include electronic libraries 47(87.0%), library management software 46 (85.2%) and library websites 45(83.3%). Twenty-six (48.1%) respondents felt that compact disks, CD ROMS 23(42.6 %) and online use education/tutorials 22(40.7%) were important. Nineteen (35.1%) selected CD ROMs as being slightly important.

**Table 21: The Importance of ICTs in enabling efficient service delivery in libraries (N=54)**

**Key: I-Very important I-Important SI-Slightly important UD-Undecided NI-Not important DK-Don't know**

ICT	VI (5)		I (4)		SI (3)		UD (2)		NI (1)		DK	
	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)
Computers	54	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Internet	54	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Email	44	81.5	9	16.7	1	1.9	0	0.0	0	0.0	0	0.0
Library Management Software	46	85.2	5	9.3	1	1.9	1	1.9	0	0.0	1	1.9
Electronic journals	48	88.9	5	9.3	1	1.9	0	0.0	0	0.0	0	0.0
Electronic books	44	81.5	8	14.8	0	0.0	0	0.0	0	0.0	0	0.0
Library online databases	48	88.9	6	11.1	0	0.0	0	0.0	0	0.0	0	0.0
Online use education/tutorials	29	53.7	22	40.7	1	1.9	0	0.0	0	0.0	2	3.7
Online library cooperation and resource sharing	30	55.6	19	35.2	3	5.6	0	0.0	0	0.0	2	3.7
Digital repository	48	88.9	5	9.3	1	1.9	0	0.0	0	0.0	0	0.0
Social media networks	31	57.4	17	31.5	3	5.6	0	0.0	2	3.7	1	1.9
Online searching	49	90.7	5	9.3	0	0.0	0	0.0	0	0.0	0	0.0
Library websites	45	83.3	9	16.7	0	0.0	0	0.0	0	0.0	0	0.0
Electronic libraries	47	87.0	6	11.1	1	1.9	0	0.0	0	0.0	0	0.0
Electronic/virtual reference services	40	74.1	11	20.4	3	5.6	0	0.0	0	0.0	0	0.0
Electronic document delivery	36	66.7	13	24.1	4	7.4	1	1.9	0	0.0	0	0.0
Online Public Access Catalogue (OPAC)	51	94.4	3	5.6	0	0.0	0	0.0	0	0.0	0	0.0
Compact disks (CDs)	10	18.5	26	48.1	16	29.6	0	0.0	2	3.7	0	0.0
Flash disks	26	48.1	17	31.5	11	20.4	0	0.0	0	0.0	0	0.0
CD ROMS	8	14.8	23	42.6	19	35.2	2	3.7	2	3.7	0	0.0

#### 4.5.4 Extent to which ICTs have had positive impact on the way we conduct business in our libraries

In this section respondents were requested to indicate the extent to which ICTs have positively impacted on the way libraries conduct their businesses. Table 23 shows that 16(29.6%) respondents believed that CD ROMs have positively impacted to a very great extent. Also

considered as having a positive impact to a great extent was compact disks (CDs) which were selected by 10 (18.5%) respondents.

**Table 22: Extent of positive impact on the way we conduct business in our libraries (N=54)**

**Key: VGE-Very great extent GE-Great extent SE-Some extent LE-Little extent VLE-Very little extent DK-Don't know**

ICT	VGE (5)		GE (4)		SE (3)		LE (2)		VLE (1)		DK	
	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)
Computers	0	0.0	0	0.0	0	0.0	13	24.1	41	76.0	0	0.0
Internet	1	1.9	0	0.0	0	0.0	13	24.1	40	74.1	0	0.0
Email	2	3.7	0	0.0	4	7.4	18	33.3	30	55.6	0	0.0
Library Management Software	0	0.0	3	5.6	3	5.6	17	31.5	30	55.6	1	1.9
Electronic journals	1	1.9	0	0.0	1	1.9	14	26.0	38	70.4	0	0.0
Electronic books	1	1.9	0	0.0	8	14.8	16	29.6	34	63.0	0	0.0
Library online databases	1	1.9	0	0.0	0	0.0	16	29.6	37	68.5	0	0.0
Online user education/tutorials	3	5.6	2	3.7	10	18.5	15	27.8	22	40.7	2	3.7
Online library cooperation and resource sharing	3	5.6	1	1.9	17	31.5	10	18.5	22	40.7	1	1.9
Digital repository	2	3.7	0	0.0	4	7.4	29	53.7	29	53.7	0	0.0
Social media networks	1	1.9	1	1.9	8	14.8	18	33.3	25	46.3	1	1.9
Online searching	1	1.9	0	0.0	3	5.6	18	33.3	32	59.3	0	0.0
Library websites	1	1.9	0	0.0	1	1.9	19	35.2	33	61.1	0	0.0
Electronic libraries	1	1.9	0	0.0	9	16.7	14	26.0	29	53.7	1	1.9
Electronic/virtual reference services	1	1.9	1	1.9	6	11.1	20	37.0	24	44.4	2	3.7
Electronic document delivery	1	1.9	2	3.7	7	13.0	20	37.0	23	42.6	1	1.9
Online Public Access Catalogue (OPAC)	1	1.9	0	0.0	0	0.0	11	20.4	42	77.8	0	0.0
Compact disks(CDs)	10	18.5	13	24.1	12	22.2	10	18.5	7	13.0	1	1.9
Flash disks	4	7.4	8	14.8	10	18.5	12	22.2	15	27.8	4	7.4
CD ROMS	16	29.6	12	22.2	11	20.4	9	16.7	4	7.4	1	1.9

There was no other type of ICT that was considered to have had an impact to a very great extent by more than five respondents. In terms of the ICTs that were considered to have had an impact to a great extent CDs and CDROMs came top once again with a response rate of 13(24.1%) and 12(22.2%) respectively. The majority of the ICTs were considered to have had an impact to some extent, little extent or very little extent. Those that had an impact to some extent include online library cooperation and resource sharing 17(31.5%). Compact disks (CDs) and CD ROMs

had an impact to some extent at the response rate of 13(24.1%) and 12(22.2%) respectively. Those that had an impact to a little extent include digital repository which was selected by 29(53.7%), followed by electronic/virtual reference service and electronic document with a response rate of 20(37.0%). The majority of respondents felt that the online public access catalogue (OPAC) had impacted positively to very little extent followed closely by computers 41(76.0%) and internet at the response rate of 40(74.1%).

**Table 23: Extent of negative impact of ICTs on the way business is conducted in the library (N=54)**

**Key: VGE-Very Great extent GE-Great extent SE-Some extent LE- Little extent VLE-Very little extent DK-Don't know**

ICT	VGE (5)		GE (4)		SE (3)		LE (2)		VLE (1)		DK	
	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)
Computers	0	0.0	0	0.0	10	18.5	9	16.7	33	61.1	2	3.7
Internet	0	0.0	1	1.9	3	5.6	12	22.2	35	64.8	3	5.6
E- mail	0	0.0	1	1.9	4	7.4	10	18.5	36	66.7	3	5.6
Library Management Software	0	0.0	0	0.0	9	16.7	7	13.0	33	61.1	4	7.4
Electronic journals	0	0.0	1	1.9	2	3.7	7	13.0	41	76.0	3	5.6
Electronic books	0	0.0	0	0.0	4	7.4	7	13.0	40	74.1	3	5.6
Library online databases	0	0.0	1	1.9	2	3.7	6	11.1	40	74.1	5	9.3
Online user education/tutorials	0	0.0	1	1.9	3	5.6	9	16.7	34	63.0	7	13.0
Online library cooperation and resource sharing	1	1.9	1	1.9	2	3.7	13	24.1	33	61.1	4	7.4
Digital repository	0	0.0	2	3.7	1	1.9	7	13.0	41	76.0	3	5.6
Social media networks	0	0.0	2	3.7	3	5.6	14	26.0	32	59.3	3	5.6
Online searching	0	0.0	1	1.9	1	1.9	8	14.8	41	76.0	3	5.6
Library websites	0	0.0	1	1.9	3	5.6	5	9.3	42	77.8	3	5.6
Electronic libraries	0	0.0	1	1.9	2	3.7	7	13.0	40	74.1	4	7.4
Electronic/virtual reference services	0	0.0	1	1.9	3	5.6	7	13.0	39	72.2	3	5.6
Electronic document delivery	0	0.0	0	0.0	4	7.4	12	22.2	34	63.0	4	7.4
Online Public Access Catalogue (OPAC)	0	0.0	0	0.0	4	7.4	8	14.8	39	72.2	3	5.6
Compact disks (CDs)	0	0.0	2	3.7	3	5.6	17	31.5	28	51.9	4	7.4
Flash disks	0	0.0	1	1.9	2	3.7	14	26.0	34	63.0	3	5.6
CD ROMS	0	0.0	2	3.7	3	5.6	20	37.0	25	46.3	4	7.4

#### 4.5.6 Whether or not librarians' roles have changed as a result of technology in the last ten years

As a follow up to the aforementioned, the respondents were asked to state whether or not the roles of librarians have generally changed as a result of technology in the last ten years. Figure 10 shows that 51(94.4) respondents believe that the roles of librarians have generally changed over the last ten years as a result of technology while 3(5.6%) respondents said that their roles have not changed.

#### 4.5.7 Level of agreement on feelings about introduction and usage of ICTs

Respondents were asked the question: how would you rate your current feelings about the introduction and usage of ICTs in your library? Thirty-eight (70.4%) of the respondents strongly agreed that they were motivated and happy, 22(40.7%) agreed that they were challenged; 16(29.6%), agreed that they were happy, 18(33.3%) strongly disagreed that they were unhappy while 13(24.1%) respondents strongly disagreed that they were threatened by technology.

**Table 24: Rate of agreement on feelings about introduction and usage of ICTs (N=54)**

**Key: SA-Strongly Agree A-Agree UD- Undecided D-Disagree SD-Strongly Disagree DK-Don't know**

Attribute	SA (5)		A (4)		UD (3)		D (2)		SD (1)		DK	
	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)
Happy	38	70.4	16	29.6	0	0.0	0	0.0	0	0.0	0	0.0
Challenged	10	18.5	22	40.7	4	7.4	10	18.5	6	11.1	1	1.9
Motivated	38	70.4	15	27.8	1	1.9	0	0.0	0	0.0	0	0.0
Threatened	2	3.7	6	11.1	3	5.6	30	55.6	13	24.1	0	0.0
Unhappy	1	1.9	2	3.7	0	0.0	33	61.1	18	33.3	0	0.0

#### 4.6 CHALLENGES FACING LIBRARIANS IN THEIR NEW ROLES

This section sought to examine the changing roles of librarians in view of time spent, workload and complexities associated with carrying out their duties and responsibilities

##### 4.6.1 Level of agreement on challenges facing librarians in their current roles

In order to establish the challenges the librarians face in their new roles, the respondents were asked the question: in your opinion, how would you rate your agreement in terms of the

following challenges that librarians face in their current roles? Table 26 provides the options. The table shows that there were a total of 18 (33.3%) respondents who strongly agreed that retraining of staff was the major challenge, 31(57.4%) respondents agreed that dynamic users with dynamic needs, complex issues that require intensive research, teaching information literacy and marketing information resources were challenges that librarians face. It was noted that some respondents disagreed that acquisition of resources (17 or 31.5%), technical services (14 or 26.0%) and use of internet (15, or 27.8%) were challenging.

**Table 25: Rate of agreement on challenges facing librarians in their current roles (N=54)**

**Key: SA-Strongly Agree A-Agree UD- Undecided D-Disagree SD-Strongly Disagree DK-Don't know**

Challenges	SA (5)		A (4)		UD (3)		D (2)		SD (1)		DK	
	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)	F	P (%)
Use of internet	2	3.7	27	50.0	0	0.0	15	27.8	9	16.7	1	1.9
Technical services	3	5.6	30	55.6	2	3.7	14	26.0	4	7.4	1	1.9
Acquisition of resources	12	22.2	19	35.2	3	5.6	17	31.5	3	5.6	0	0.0
Retraining of staff	18	33.3	26	48.1	0	0.0	8	14.8	1	1.9	1	1.9
Dynamic users with dynamic needs	13	24.1	31	57.4	2	3.7	7	13.0	1	1.9	1	1.9
Complex issues that require intensive research	11	20.4	31	57.4	3	5.6	7	13.0	1	1.9	1	1.9
Teaching information literacy	8	14.8	31	57.4	3	5.6	9	16.7	1	1.9	1	1.9
User education	6	11.1	21	38.9	2	3.7	12	22.2	2	3.7	1	1.9
Marketing information resources	6	11.1	31	57.4	2	3.7	12	22.2	1	1.9	2	3.7

#### 4.6.2 Time spent in doing library work

The study also sought to examine the changing role of libraries in view of time spent by librarians to carry out their duties and responsibilities. In this regard, the following question was asked: in your opinion, would you say that the roles of librarians have changed in terms of the following indicators? The indicators are provided in table 27 which shows that most respondents, 37(68.5%), felt that the time spent on circulation of resources has greatly decreased. Other indicators in which respondents felt that time has greatly decreased include: accessing the catalogue (35 or 64.8%), registration of members (33 or 61.1%), and cataloguing and classification (32 or 59.3%). A total of 22(40.7%) respondents indicated that the time spent on

marketing of library resources has slightly decreased while 29(53.7%) felt that the time spent on weeding of materials has remained the same.

**Table 26: Time spent in doing library work (N=54)**

**Key: GI-Greatly Increased SI- Slightly Increase RS-Remained the Same SD- Slightly Decreased GD-Greatly Decreased**

	GI (5)		SI (4)		RS (3)		SD (2)		GD (1)	
	F	P (%)								
Acquisition of library materials	8	14.8	2	3.7	2	3.7	17	31.5	25	46.3
Cataloguing & classification	8	14.8	2	3.7	1	1.9	11	20.4	32	59.3
User instruction	10	18.5	7	13.0	1	1.9	16	29.6	20	37.0
Reference services	8	14.8	7	13.0	5	9.3	19	35.2	15	27.8
Circulation- lending & returning of materials	9	16.7	0	0.0	1	1.9	7	13.0	37	68.5
Indexing	3	5.6	5	9.3	19	35.2	10	18.5	17	31.5
Abstracting	3	5.6	6	11.1	14	26.0	11	20.4	20	37.0
Registration of members	9	16.7	0	0.0	1	1.9	11	20.4	33	61.1
Teaching information literacy	10	18.5	9	16.7	2	3.7	21	38.9	12	22.2
Stock taking	2	3.7	1	1.9	20	37.0	14	26.0	17	31.5
Weeding of materials	2	3.7	2	3.7	29	53.7	16	29.6	5	9.3
Literature searches for clients	10	18.5	7	13.0	1	1.9	9	16.7	27	50.0
Marketing of library resources	9	16.7	6	11.1	2	3.7	22	40.7	15	27.8
Accessing the catalogue	9	16.7	4	7.4	0	0.0	6	11.1	35	64.8

### 4.6.3 Librarians' workload

The respondents were further asked to state whether or not their workload has increased over time and the results are provided in Table 28. This section sought to find out how the roles of librarians have changed in libraries in terms of workload. Table 28 shows that 11(20.4%) respondents felt that the workload on literature searches for clients had greatly increased. Ten (18.5%) respondents were of the opinion that marketing of library resources had slightly increased while 24(44.4%) felt that the workload on weeding of materials remained the same. A total of 19(35.2%) respondents felt that the workload on indexing had slightly decreased. Other indicators in which respondents felt that the workload had slightly decreased included teaching information literacy (19 or 35.2%), stocktaking (19 or 35.2%), and marketing of library resources (19 or 35.2%). The majority (38 or 70.3%) of respondents felt that the workload on

registration of members had greatly decreased followed closely by circulation (37 or 68.5%) and accessing the catalogue (35 or 64.8%).

**Table 27: Workload for Librarians (N=54)**

**Key: GI-Greatly Increased SI- Slightly Increased RS-Remained the Same SD- Slightly Decreased GD- Greatly Decreased**

	GI (5)		SI (4)		RS (3)		SD (2)		GD (1)	
	F	P (%)								
Acquisition of library materials	9	16.7	6	11.1	0	0.0	15	27.8	24	44.4
Cataloguing & classification	5	9.3	2	3.7	1	1.9	14	26.0	27	50.0
User instruction	12	22.2	4	7.4	2	3.7	4	7.4	24	44.4
Reference services	10	18.5	8	14.8	2	3.7	17	31.5	17	31.5
Circulation- lending & returning of materials	8	14.8	1	1.9	0	0.0	8	14.8	37	68.5
Indexing	1	1.9	1	1.9	14	26.0	19	35.2	19	35.2
Abstracting	2	3.7	1	1.9	13	24.1	17	31.5	21	38.9
Registration of members	8	14.8	1	1.9	1	1.9	6	11.1	38	70.4
Teaching information literacy	10	18.5	9	16.7	1	1.9	19	35.2	15	27.8
Stock taking	2	3.7	3	5.6	19	35.2	19	35.2	11	20.4
Weeding of materials	2	3.7	5	9.3	24	44.4	17	31.5	6	11.1
Literature searches for clients	11	20.4	8	14.8	0	0.0	10	18.5	25	46.3
Marketing of library resources	7	13.0	10	18.5	3	5.6	19	35.2	15	27.8
Accessing the catalogue	7	13.0	4	7.4	0	0.0	8	14.8	35	64.8

#### 4.6.4 Complexities associated with librarians' work

In this section, respondents were requested to indicate how the roles of librarians have changed in libraries in terms of complexities associated with their work. Results of table 29 indicate that 4(7.4%) respondents each felt that acquisition of library materials, teaching information literacy, literature searches for clients and marketing of library resources had greatly increased in complexity. A total of 14(26.0%) respondents felt that abstracting had slightly increased while 28 (51.9%) respondents felt that weeding of materials remained the same. Twenty-three (42.6%) respondents felt that complexities associated with acquisition of library materials had slightly decreased. The majority of respondents 45(83.3%) felt that complexities in circulation had greatly decreased. Other indicators in which respondents felt that the complexity of work had greatly decreased included registration of members 38(70.4%) and accessing the catalogue 37(68.5%).

**Table 28: Complexities associated with librarians' work (N=54)**

**Key: GI-Greatly Increased SI- Slightly Increased RS-Remained the Same SD- Slightly Decreased  
GD-Greatly Decreased**

	<b>GI (5)</b>		<b>SI (4)</b>		<b>RS (3)</b>		<b>SD (2)</b>		<b>GD (1)</b>	
	<b>F</b>	<b>P (%)</b>								
Acquisition of library materials	4	7.4	6	11.1	3	5.6	23	42.6	23	42.6
Cataloguing & classification	3	5.6	4	7.4	0	0.0	13	24.1	34	63.0
User instruction	1	1.9	7	13.0	3	5.6	13	24.1	30	55.6
Reference services	1	1.9	5	9.3	4	7.4	20	37.0	24	44.4
Circulation, lending & returning of materials	1	1.9	1	1.9	14	26.0	11	20.4	45	83.3
Indexing	1	1.9	3	5.6	14	26.0	16	29.6	20	37.0
Abstracting	1	1.9	14	26.0	14	26.0	17	31.5	20	37.0
Registration of members	2	3.7	1	1.9	4	7.4	9	16.7	38	70.4
Teaching information literacy	4	7.4	5	9.3	3	5.6	17	31.5	25	46.3
Stock taking	3	5.6	2	3.7	17	31.5	20	37.0	12	22.2
Weeding of materials	2	3.7	2	3.7	28	51.9	13	24.1	10	18.5
Literature searches for clients	4	7.4	8	14.8	1	1.9	9	16.7	32	59.3
Marketing of library resources	4	7.4	5	9.3	4	7.4	16	29.6	25	46.3
Accessing the catalogue	3	5.6	5	9.3	1	1.9	8	14.8	37	68.5

#### **4.7 RESULTS BASED ON OPEN-ENDED QUESTIONS IN THE QUESTIONNAIRE**

This section deals with the qualitative responses obtained through the administration of the questionnaire. Fifty four (100.0%) respondents responded to the questionnaire. Twenty three (42.6 %) respondents were from the College of Humanities and Social Sciences (CHSS), 13 (24.1%) were from the College of Education and External Studies (CESS), 8 (14.8%) were from the College of Health Sciences (CHS), 6 (11.1%) were from the College of Biological and Physical Sciences (CBPS) and the remaining 4 (7.4%) were from the College of Agriculture and Veterinary Sciences (CAVS).

##### **4.7.1 Information and communication technologies available in libraries**

In this section, the respondents were asked to list information communications technologies (ICTs) in use in their libraries in which they work. The following was a list of ICTs and ICT driven services given by the respondents as available in their libraries: computers, printers, scanners, internet hubs and wi-fi, telephones, photocopiers, email, library website, online

searching, digital repository, Online Public Access Catalogue (OPAC), electronic books, electronic document delivery (EDD), electronic journals, library management software (Vubis Smart), flash disks, online databases, CD-ROMs, CD-RAM, microfiche, microfilm and, lastly, social media networks.

#### **4.7.2 Challenges presented to libraries and librarians in the information age**

Libraries and librarians face several challenges in their day-to-day activities, some of which are as a result of the emergence of the information age. This section sought to establish the challenges librarians face in their new roles. The following were the challenges given by the respondents:

- There is laxity on the side of library staff since some of the work is done by the ICTs.
- Some libraries have few computers, which are unable to serve all the users. An example is the CHS.
- There is frequent system breakdown.
- Most librarians are not aware of the emerging trends and issues.
- Organizing of online information resources forms part of the greatest challenge.
- Inability to acquire ICTs and software that can adequately cater for persons with disabilities. An example is students with visual impairments.
- Libraries are not physically and heavily used because patrons can access information from anywhere even in their sitting rooms.
- Some libraries experience poor internet connectivity as a result of low bandwidth. An example is the CBPS.
- Information explosion: there is usually confusion on the authenticity of downloaded information.
- Some librarians are resistant to change. They are unwilling to adopt new technologies.
- The library budget has been reduced thereby making acquisition of ICT equipment, peripherals, connectivity, etc impossible.
- Some library staff wastes a lot of time on social media chatting and skyping instead of working.

### 4.7.3 Recommended solutions to selected challenges

Respondents were asked to give recommended measures to some of the challenges that the researcher listed for them. The following were given as measures by the respondents:

a. Use of internet

The respondents said that there has been poor internet connectivity as a result of low bandwidth. To solve this problem, the respondents said that, through the management, the library should acquire powerful servers to increase bandwidth connectivity.

b. Technical services

The respondents reported that some of them in the library are not very conversant with organizing resources online. To solve this problem, the respondents said that those library staff who are not conversant with organizing resources online should be trained on how to organize resources by use of Vubis Smart as a library management system in use in their library.

c. Acquisition of resources

The respondents said that acquisition of resources is a challenge in that the process takes too long to materialize and therefore there is need to revisit and revise the protocols followed. For instance, instead of having a centralized system of acquisition, each library should acquire resources independently. The respondents also indicated that the acquisition librarian should always liaise with the procurement department to hasten the process and also more funds should be allocated towards the acquisition.

d. Staff retention

The respondents reported that the library has had a high staff turnover due to the heavy workload which does not commensurate with their pay leading to very low work morale. The respondents indicated that to end this problem staff need to be paid a salary which is commensurate with the work they do.

e. Re-training of staff

The respondents said that because of the changes in technology new programmes and packages have also come into being which require that staff be re-trained to be up-to-date. The respondents indicated that library staffs should be re-trained in the use of ICTs

to keep abreast with these changing technologies. The respondents also said that the university management should hold regular workshops and short courses for the library staff to update them on new developments in the field of ICT. The respondents further said that adequate funds should also be allocated for such trainings.

f. Dynamic users with dynamic needs

The respondents said that due to changes in technology users have become dynamic and their needs have changed which also has become a challenge to the librarians. The respondents indicated that librarians should carry out user surveys to determine user needs. They should also hold regular trainings and updates on emerging trends and issues to help them solve such problems.

g. Complex issues that require intensive research.

The respondents said that some of their patrons are research oriented and present different issues which require intensive research. The problem is that funds to carry out those researches are not sufficient and also the technicalities involved in terms of search strategies pose a challenge to subject librarians. To solve this problem, the respondents said that library staffs should be trained on ICT applications and advanced search strategies to enable them solve those emerging issues. University management should also support research by allocating sufficient funds towards research.

h. Teaching information literacy

The respondents said that they are not comfortable teaching information literacy, some of them claiming they lack courage to stand before a large group of people. To solve this problem, the respondents indicated that librarians should adopt new teaching platforms as well as avail teaching resources to staff and students and also teach users communication skill lessons in all faculties.

i. User education

The respondents said that user education is a challenge because it is only offered to students on the first week after reporting to campus, meaning the majority of students forget easily what they have been taught and cannot help themselves. To solve this

problem, the respondents indicated that the library should provide user education on a day to day basis. It should be continuous so that users learn how to access information resources - both print and non-print - without any difficulty.

j. Marketing information resources

The respondents reported that librarians don't market their products because they still lack the marketing skills. The respondents gave the following solutions to this challenge:

- The library staff should make users aware of the resources available to them by use of institutional websites, through university exhibitions, open days and then benchmark with other university libraries.
- Librarians should participate in faculty board meetings. Libraries should also use social networking sites such as Facebook, MySpace and Twitter as they have unique opportunity to share and widen access to information resources and services.
- The respondents further said that librarians should also take advantage of The Commission for Higher Education which conducts annual events for universities to showcase their programmes to the public. In this event, they normally display and promote library and information to the public through brochures and other useful information materials about university libraries which are given to the public.
- In addition, they should inform the user population on new arrivals of information resources by use of such methods as notice boards, library web pages, email, cell phone communication, word of mouth, library catalogues, instant messaging, chat references, library orientation and user education.

#### **4.8 RESULTS OF STRUCTURED INTERVIEWS**

This section deals with the responses from library directors, their deputies and head librarians of the six colleges who were interviewed using structured interview schedules. The interviews were conducted face-to-face on an individual basis. The purpose of the interview was to gather more

information on the changing roles of academic librarians in the current information age to supplement the questionnaire. Their responses were as follows:

#### **4.8.1 Extent to which library functions as well as processes that have changed in the current information age**

This section sought to find out the extent to which the functions as well as processes and procedures in libraries have changed in view of the current information age.

#### **4.8.2 Information resources which were available to the respondents at the start of their work**

The respondents reported that before the launch of Vubis Smart as library management software in 2001 library functions at the University of Nairobi and its constituent college libraries were basically manual. The basic library functions of acquisitions, circulation, cataloguing and classification were all conducted manually. Besides, the librarians also did manual work of shelving, indexing of local publications, sending accession lists to teaching faculties, and preparation of research in progress. They also had exchange programmes with Makerere and Dar es Salaam universities whereby resources were practically posted manually to participating universities. Today, all library functions are automated and all research done by the undergraduates and postgraduate students can be accessed online via the institutional repository website by authorized personnel with valid passwords.

The respondents reported also that college librarians who started working in the early 1970s and especially those working at the College of Humanities and Social Sciences (CHSS) had to go through a rigorous training in cataloguing for two years before heading a unit, which has since been discontinued. The study revealed that during requisitions, the librarians used to send the requisition forms to suppliers through the post office, unlike today where orders are made online. The University libraries used the card system of lending books at the circulation desk. Cataloguing was done using Anglo American Cataloguing Rules (AACR) and subject headings were assigned to documents by use of the Library of Congress list of subject headings. The Library of Congress schedules were used to classify books. Book acquisition and processing was

done centrally at the main campus library and distributed to the respective branch libraries. Today, only acquisition is done centrally while processing has been decentralized. Besides the library functions, college librarians of respective college libraries, namely CHSS, CEES, CBPS, CAVS and CHS, performed additional duties of general supervision and other managerial duties.

The respondents said that after the launch of Vubis Smart as library management software which saw the introduction of information communication technologies (ICTs) in the University libraries, acquisition lists were scanned and sent to the suppliers through emails, which was approved by the University management.

#### **4.8.3 Library functions that have been discontinued in libraries**

Once the automated system was put in place, the library staff were trained and embarked on retrospective conversion of data and bar-coding. The manual catalogue was converted into Online Public Access Catalogue (OPAC). The circulation, cataloguing and acquisition services started operating under Vubis Smart software. As a result, some manual library functions have been discontinued. Some of these functions include but are not limited to manual issuing and receiving of library items. Card catalogues are now a thing of the past; however, it acts as a back-up when the system goes down. This is applicable to all university college libraries.

The respondents reported that library functions in the six colleges have changed tremendously given the move from the manual library system to the electronic system. Registration of readers is now done online; some resources have also changed from print to electronic. Acquisition librarians now subscribe to electronic journals, electronic books and other online databases. Circulation services are automated, and cataloguing and classification is done online; reference services, especially “Ask the librarian service”, are done online; and library overdue is calculated online. SMS alerts are sent as reminders to those holding books as opposed to writing reminders, which used to take too long to reach the recipient. Direct contact between library users and library staff has been reduced because most users are now independent and most communications are done via email including those in managerial positions. As compared to the manual system, today users have less face-to-face interaction with the library staff.

#### **4.8.4 Change of volume of responsibility over the last ten years in terms of various functions performed in the library**

The respondents said that the decrease and increase in the volume of responsibility of various functions performed in the library is relative. The electronic environment has increased the volume of work in terms of responsibilities, but hardly one item takes much time. It takes less time to satisfy the needs of users, with usually only a few minutes needed to get the results. There could be a decrease because there are probably fewer print materials for processing given the subscription of e-journals and e-books leaving the librarian with only one responsibility of training the users on how to access them rather than processing them physically. The traffic flow has also decreased as most of the users are only interested in getting the instructions and thereafter they can access the information at their convenience, at home or anywhere outside the library premises. There has been, however, some increase in the volume of work as college librarians have to liaise with the library committee to capture the teaching requirements of the faculty, meet with class representatives to discuss library matters, attend board meetings, organize for students' orientation and participate in the orientation programme; respond to emails from resident lecturers who usually send their requests through the librarian's mobile phone and many other responsibilities. Some respondents indicated that there could be also an increase in workload if there is a backlog in the cataloguing department because some librarians are still learning how to process library materials online and therefore the pace at which they operate may be slow.

#### **4.8.5 Complexity of duties/responsibilities**

The respondents reported that the major complexity that they could associate with the current duties or responsibilities experienced over the last years was co-coordinating and streamlining of the extra mural centres alongside running their major branch libraries. Teaching of information literacy to new users was also an issue of concern. Initially, users were required to know how to go about the automated library system, how to search and use University resources but without proper orientation; it is as good as having no resources or services as they will not find anything. But, as time went by, users became familiar with the resources making work easier and simpler.

Another complexity is giving feedback to users who pose questions through the “Ask the librarian service”. Usually users expect feedback at the earliest time possible and where feedback has to delay because of too much work on the part of the librarian this may cast doubt on the librarian’s capability. Besides, responding to inquiries by phone or email, the librarians are deprived of almost all the clues they take for granted when dealing with users face-to-face. With no eye contact, facial expression or body language and frequently no tone of voice either, the risk of misunderstanding between the reference librarian and the inquirer are very high. Users tend to be more impatient given the longer time they have to wait for the response. The college librarian of CAVS cited complexity of his duties as those of coordinating library functions, attending board meetings, and being a link with faculties to ensure the needs of the customers are satisfied because ICTs are not standalone but a combination with the quality management system (QMS).

#### **4.8.6 Time spent in discharging duties/responsibilities**

The respondents reported that even in the electronic environment, college librarians required more time to execute their responsibilities because most of them work extra hours. However, other librarians in other departments who are conversant with the library management software, required less time discharging their duties or responsibilities while those still in the learning phase required more time. Some respondents noted that the amount of time spent on duties/responsibilities largely depended on the tasks that each librarian is handling and the level of training that one has acquired.

### **4.9 COMPETENCIES AND SKILLS OF LIBRARIANS IN THE CURRENT INFORMATION AGE**

This section sought to examine the competencies and skills required of librarians in the current information age.

#### **4.9.1 A comparison of competencies and skills before and after the introduction of ICTs in libraries**

The respondents reported that the most valuable competencies and skills in the libraries before the introduction of information communication technologies were basic principles of librarianship and the level of training for each librarian. The librarian had to have the right

professional qualification, the right attitude towards work, the ability and capability to learn what satisfies the needs of the users, the experience to address key issues related to user needs, cataloguing and classification skills, communication skills, information retrieval skills, and selective dissemination of information skills which required the librarian to do user profiling and current awareness skills notwithstanding. Most respondents agreed that the most basic skill or competence that librarians needed before the introduction of ICTs was organization of recorded knowledge and information.

However, some competencies and skills have become increasingly important after the introduction of information communication technologies; they include good general IT skills and proven ability to learn new applications, and understanding of the library management software. In this case this meant the Vubis Smart for University of Nairobi libraries and any other library management software as applicable to the library where one works. The respondents said that library management systems operate in different ways and therefore there is need for one to learn each system to acquaint oneself. The respondents further said that each librarian should be able to relay information electronically, scan and attach documents, put resources in a platform that will enable easy access by users and have the right search strategy skills. The respondents indicated that management skills are also very important which librarians have taken for granted. The librarians said that they needed to manage staff and besides acquire basic financial skills because there is a lot of budgeting involved in library work. The respondents also indicated that they should be team players with the ability to work under minimum supervision.

#### **4.9.2 The extent to which the current competencies and skills have improved service provision by libraries**

The respondents reported that the current competencies and skills have improved service provision in libraries a great deal. They have made librarians visible and users can see the products librarians are offering. The ICT skills have made searching online easier; librarians can now get a comprehensive and wide range of information. There is improved dissemination of information and added value in satisfying user needs, which are also changing. However, they have also come with additional responsibilities. An example is the library orientation whereby

the librarian has to put up a class and train the users with hands on techniques for searching as opposed to the previous situation where orientation was a mere library tour and users were taught a few do's and don'ts. On the contrary, despite the additional responsibilities, librarians are now able to demonstrate to users how to independently access online resources through the same orientation and teaching of information literacy.

#### **4.10 EFFECTS OF INFORMATION AND COMMUNICATION TECHNOLOGIES ON THE ROLES OF LIBRARIANS IN THE INFORMATION AGE**

This section sought to determine the effects of information and communication technologies (ICTs) on the roles of librarians in the information age.

##### **4.10.1 The introduction or availability of ICTs in libraries overtime**

The respondents reported that the ICTs which were available in the University of Nairobi libraries between the periods of 1991 to 2000 were: mainframes which were used for storage of information, black and white desktop micro computers used for day-to-day operations, terminals attached to the ICT centre, microcomputers which had a bigger storage capacity, one printer which was only available in the computer room, CD ROMS based information, indexes and abstracts and floppy diskettes which were basically at the university ICT centre at the main library and CD ROMs. In the period between 2001 and 2010, the College of Humanities and Social Sciences had an independent ICT Department with a server at the main campus library. In 2001, an electronic Vubis Smart integrated library management system was installed. In 2009, there was a computer lab and a printer in every branch library, which facilitated access to internet and email. Printers, scanners and photocopiers were also available. For the period 2011 to 2013, the University of Nairobi had an institutional repository and a library website.

##### **4.10.2 The role of ICTs in terms of their importance in enabling efficient service delivery in libraries**

The respondents said that the above mentioned ICTs are crucially important for sustainable development and enabling service delivery in libraries. ICTs have made it possible to quickly find and distribute information both locally and nationally; do so much work in a short time;

connect the remote users with the rest of the world and, besides they have also made the librarian's work simpler.

The respondents feel that the use of communication technologies (ICTs) has made the library and librarians more visible and has increased demand, putting libraries on the world map. Users can now have more access to resources. There are more hits on the website including people in the Diaspora. Users of laptops can now access resources off campus. The work of librarians has been made simpler because users have the ability to access external databases to retrieve information via the internet, and users have the ability to search catalogues (OPAC) using many access points such as keywords, phrase, searching editors, year of publication, etc. Readers have the ability to research materials on loan at terminals, and users can now know through the computer terminals the materials on loan and when they will be returned. ICTs have also strengthened interlibrary loan system between universities that share resources. It is more economic to share resources because no university or college is self-sustainable. Electronic resources have further facilitated information exchange. Take as an example KLISC: it is now possible for the users of participating libraries to access and/or download the required materials remotely. Use of ICTs has led to easy execution of the current awareness service (CAS) because it is now easier to put information up on the web or email it to many people at once. According to the respondents, this has led to easy and faster dissemination of information. Book selection has proved to be fairly convenient.

#### **4.10.3 The extent to which ICTS have negatively impacted on the way business is conducted in libraries**

The respondents reported that one of the negative impacts of ICTs on the way the libraries conduct their businesses is that it takes a long time to upload current events. As events unfold, all events are supposed to be captured on the library website which is not usually the case. The college librarian at CHS gave an example of the training he had conducted on QPULSE which took too long to be uploaded, perhaps due to the speed of the internet at the college. QPULSE is information management software which deals with Quality Management System. Another negative impact is that the internet speeds are disappointing at times and require upgrading. The

respondents indicated that there is too much information which complicates matters for both librarians and users, especially the latter who seem not to have adequate searching skills as compared to librarians. Users lack a platform to searching all databases at once. They only concentrate on one database due to lack of searching strategies. According to some respondents, another negative impact on the way we conduct our business is that, due to the presence of ICTs, staff have relaxed and let go of their professional responsibilities. There are also instances of power failure with no back up in place as reported in the College of Education and External Studies.

#### **4.10.4 Extent to which the roles of librarians have changed in libraries**

The respondents were of the opinion that the roles of academic librarians have somehow changed over time as a result of the emergence of ICTs (and the information age). They offered that the change is discernible as the librarians of the University of Nairobi library have moved away from the traditional way of doing things. Seemingly, the change in roles is associated with their functions, duties and responsibilities. The respondents repeated that most library functions including acquisition, cataloguing and circulation are fully automated. Librarians have also become trainers by conducting user education and information literacy programmes where they make students aware of the available library facilities, information resources and services.

#### **4.11 CHALLENGES LIBRARIANS FACE IN THE EXECUTION OF THEIR ROLES**

This section sought to establish the challenges facing librarians in their new roles. Respondents were asked to identify challenges they face in their ‘new’ roles. The following were the responses:

- **Inadequate staff:** People are an organization’s most valuable resource and, if managed appropriately, provide livelihood to the organization; if managed inappropriately, however, the workforce becomes an expensive commitment that leads to few rewards and many problems. The respondents reported that the libraries at the University of Nairobi have for a long time experienced low staffing; the few librarians available are overworked, have low morale and are not

motivated. The University library has also experienced high staff turnover due to poor pay. The pay is not commensurate with the work done by each librarian.

- **Acquisition of print resources:** The respondents are cognizant of the fact that appropriate and sustainable development of collections is one of the key issues in the operations of a university library. The respondents observed that due to centralized acquisition of information resources by all college libraries, there is usually a delay because of late approvals from the procurement department. They further said that, according to the University of Nairobi service charter, the process of acquisition is supposed to take a maximum of 60 days. This means a resource is to be acquired, processed and put on the shelf for use within 60 days which has proved unachievable due to the delay experienced with the procurement process which was reported to be taking longer than the 60 days.
- **Budget:** The respondents reported also that according to the University of Nairobi policy, 10% of the university budget is supposed to be allocated to the library. This has never been the case; instead the library is usually allocated 1% of the library budget. This has disabled them in terms of raising enough funds to procure library resources.
- **Lack of recognition by policy makers:** The respondents reported that policy makers who are university's senior management have low regard for librarians and they regard librarianship as a low profile profession.
- **Marketing skills:** Other than the university exhibitions, librarians don't market their products. They still lack the skills and perhaps that explains why they are not recognized by policy makers.
- **Changing needs of the users:** The respondents said that most library users are more updated technologically as opposed to the staff who have taken a long time to embrace technology. The respondents further said that some librarians are not even on Facebook or other social networks.
- Some respondents said that they did librarianship out of influence without understanding what it is all about, only to realize that their jobs entail arranging of

books, which they consider a very boring exercise. Others were contemplating taking another career.

- Complexity of information resources due to information explosion.
- Inability to satisfy complex user needs due to deficiency in training and continuing education programs in the field of ICT.
- Librarians complained that they often receive requests for acquisitions from faculty members very late meaning they have to wait for a long time before they can move forward.
- The respondents said that they are unable to include table of contents while cataloguing books due to their heavy workload and fewer staff so they opt for simple cataloguing as opposed to full cataloguing.
- There is frequent breakdown of Vubis Smart as a library management system in use in the library.
- Organizing online information resources is a challenge to many librarians. The respondents said that they find it difficult organizing online resources due to the complexities and legalities involved.
- The respondents said that the library budget is usually reduced making it difficult to acquire more ICT equipment, peripherals, and connectivity.
- The respondents said that some library staff members waste a lot of time on social media chatting and skyping instead of working meaning the few library staff available are overworked.

#### **4.12 CHANGES IN TERMS OF TIME SPENT, WORKLOAD AND COMPLEXITIES ASSOCIATED WITH LIBRARIANS' WORK**

This section sought to examine the changing roles of librarians in view of the time spent, workload and complexities associated with the librarians' work. The following were responses given by the respondents.

##### **4.12.1 Time spent**

The respondents reported that despite the increased workload the time spent to accomplish the task is less than previously. They said that the librarian takes less time to satisfy the needs of the users. Within only a few minutes, a reader can be served. It was, however, surprising to hear one respondent complain that she spends more time to serve users as ICTs do not necessarily reduce the workload. An example given by the respondent is the use of various databases to search and retrieve as many resources as possible in order to satisfy users.

#### **4.12.2 Workload**

The respondents reported that the electronic environment has increased the volume of work for librarians, for instance, responding to emails and conducting online searches. But despite the increase, there is assistance from the computers, which have made it possible to clear huge backlogs in such areas as cataloguing. The workload has also increased in terms of opening hours, which have been increased due to user demands. The university is looking forward to opening the library 24 hours a day.

#### **4.12.3 Complexities**

The respondents said that librarianship overlaps with many other fields of knowledge such as archives, records management, publishing and the book trade. This does not explain clearly what kind of training librarians are undertaking and the likely jobs attached to their qualification which brings confusion when librarians are employed.

The respondents further said that librarianship as a profession has a lot of document processing taking place before one can come up with a tangible end product. This includes the process of preparing a book from the time it is received from the supplier until it reaches the shelf for use. Coordinating these processes is complex as compared to other fields of knowledge.

The respondents also said that librarianship as a field of knowledge is excluded from other accompanying courses like accounting and law yet the librarians require some financial skills for budgeting purposes.

The respondents said that for them to work in an electronic environment, they are required to be skilled in the new trends since earlier library functions were not complex. Today, they need to generate spine-marking labels, and generate bar codes to complete the electronic process. They further said that the library management software in use, i.e. Vubis Smart, requires that the librarian be able to understand the system well to carry out tasks like reading statistics, putting books on hold, stocktaking and even calculating overdue fines.

The respondents said that librarians are also charged with the responsibilities of blocking some illegal sites, which are accessed by the users despite being notified about the rules and regulations governing the use of computers.

#### **4.13 SUMMARY OF THE CHAPTER**

The results of the study were presented in the chapter in the order of the questionnaire and structured interview. The salient issues emerging from this chapter were:

The functions as well as processes and procedures for librarians have changed tremendously over time given the shift from manual based services to electronic based services. The most valuable skills after the introduction of ICTs were found to be information retrieval, technological knowledge, basic computer skills and internet skills.

As a result of ICTs, librarians agreed that their roles have changed for the better given the move from traditional services to automated services. The majority of them said they are happy and motivated. However, they are also faced with challenges in the execution of their roles which include but are not limited to: inadequate staffing, acquisition of print resources, slashed budgets, lack of recognition by the university's senior management, lack of marketing skills and changing needs of users.

The next chapter will discuss the findings of this study.

## **CHAPTER FIVE: DISCUSSION OF FINDINGS**

### **5.1 INTRODUCTION**

According to Neuman (2006:498), the discussion of the findings is not “a selective or partisan interpretation” but “a candid discussion of what is in the results section”, so that a reader can “examine the data and arrive at different interpretations”. Neuman proposes that in the discussion of results the researchers should give a clear interpretation of his/her findings. He further adds that the easiest way for beginners to organize the discussion is according to a hypothesis. However, this study did not use a hypothesis and for that reason, in line with what the author has proposed, this chapter will discuss the findings in relation to the study’s research questions and objectives formulated as indicated in chapter one.

Chapter five presents the discussion relating to the findings of the study. The purpose of the study was to determine the changing roles of academic librarians in the current information age at the University of Nairobi and its constituent college libraries. This will be discussed under the following headings:

- Profile of the respondents
- Extent to which library functions as well as processes have changed in the current information age
- Competencies and skills of librarians in the current information age
- Effects of information and communication technologies on the roles of librarians in the information age
- Challenges facing librarians in their new roles
- Recommended measures that will help librarians overcome the challenges in the current information age.

### **5.2 RESPONDENTS’ PROFILES**

This section discusses the profile of respondents which focused on gender, age, job titles, professional qualification and number of years they have worked in their respective libraries as a

way of assessing their work experience and also experience in the library environment in terms of years they have worked in the sector.

In terms of the respondents' gender, the findings revealed that majority of library staff at the UoN and its constituent college libraries were male. Out of the 54 library staff who participated in the study, 28(51.9%) were male while 26 (48.1%) were female. This is an indication of male dominance over their female counterparts at the University of Nairobi. Nevertheless, the findings may also imply that the majority of those who were able to respond to the questionnaire were males as compared to females and therefore this does not necessarily imply male dominance in the libraries under investigation.

Age was another demographic variable that respondents were required to state. A study carried out by Kipturgo (2011) showed that age had a statistically significant association with attitude towards computerization. The younger nurses were more positively inclined to computer use than their older colleagues. Monitoring the age profile is also important because it ensures there is a continual movement between younger people gaining new skills within the emerging trends and knowledge transfer at any given institution, including libraries in this case. This ensures constant flow of adequately trained professionals who later pass on their knowledge to new people joining the career, thereby completing the cycle (Tarrein, 2009).

The findings in the current study revealed that many respondents, i.e. 17(31.5%), were in the age range of 41 to 50 years followed by those who were in the age range of above 50 years (i.e. 16 or 29.6%). Fifteen (27.7%) respondents were in the age range of 31-40 years while a minority of respondents, i.e. 6 (11.1%), was below 30 years of age. The distribution of the staff members at the libraries shows a mixture of employees in terms of age, which may imply a broad spectrum of experience.

In terms of the respondents' job titles, it has been observed that job titles are often used synonymously with job descriptions and job specifications (Crosby, 2009). Job descriptions let employees know what is expected of them. If people are going to perform their assigned tasks,

then they obviously have to measure the results. It is true that job titles may also reflect changing roles of the title bearers. This is manifest in Crosby's (2009) assertion that that job descriptions and specifications usually include known duties and responsibilities required, levels of education and work experience, salary and benefits provided to employees in exchange for their labour and information regarding the work environment.

The findings in this study revealed that the majority of respondents who numbered 34(63.0%) went by the title of library assistants, 13(24.1%) respondents were senior library assistants, 4 (7.4%) work as librarians; senior librarians totalled 2(3.7%) while library attendants constituted a minority of 1 (1.9%). These titles do not necessarily reflect the changes in the employees' work and responsibilities. The titles have been in existence for a long time. Apparently, therefore, the titles have remained the same over time.

The other item that was required of the respondents as far as building their profiles for this study was concerned is was professional qualification. According to Tarrein (2009), the higher the education level, the more knowledgeable one is and the many years one works, the more experience one gains. At the University of Nairobi, being an institution of higher learning, it is assumed that most library staff should have the highest professional qualification, that is, at least a first degree. This was not the case since the findings revealed that the majority of respondents had diploma as their highest qualification. Twenty three (42.6%) respondents had diplomas, 16(29.6%) had degrees while 14(26.0%) had a master's degree. A postgraduate diploma constituted a minority of 1(1.9%) respondent. None of the respondents had a PhD. The researcher would also assume that some of them are taking up higher courses, which they have not completed and therefore would not explain that in the questionnaire since there was no provision for that. This finding requires attention as far as further education for the library employees is concerned. Although according to international standards for academic librarians, any librarian appointed to a college or university library faculty shall have the appropriate terminal professional degree (ACRL, 2010), the progression in education will be more vital since librarians will gain more knowledge that will enable them to deal with emerging trends and more so, if shared, will improve the quality of service provision to its clientele.

Respondents were also asked to indicate the years they have worked in their respective libraries as a way of assessing their work experience. The findings revealed that the majority of the respondents numbering 22(40.7%) of the respondents had worked in the library for over 15 years. This was followed by 17(31.5 %) respondents who had worked for less than 5 years. Ten (18.5%) respondents had worked in the library for between 11 and 15 years while a minority totalling 5(9.3%) had worked for between 5 and 10 years. Based on the study, the majority of respondents have worked in the library for more than 5 years. This is an indication that the majority are able to understand the emerging trends and issues in the field of librarianship. This finding was also in agreement with a study done by Elkin (2008) whose findings reported that working longer in any field of knowledge gives you more experience and enables you to pass over the knowhow to the incoming members of staff.

Finally, in the development of the respondents' profiles, respondents were asked to indicate their experience in the library environment in terms of years they have worked in the sector. The findings revealed that most of the respondents who numbered 30(55.6%) had work experience of over 15 years followed by 9(16.7%) who had work experience of between 2 and 5 years while 6-10 years and 11-15years had been worked by 7(13.0%) in both cases. A minority of 1(1.9 %) person had work experience of less than 2 years. Experience in a library environment is a characteristic that can affect one's way of looking at and appreciating how his/her roles have changed in line with his/her duties. The more years you work the more experience you gain, and the easier it becomes for you to solve emerging issues. Besides, it also becomes easier to help those who have less work experience.

### **5.3 EXTENT TO WHICH LIBRARY FUNCTIONS AS WELL AS PROCESSES THAT HAVE CHANGED IN THE CURRENT INFORMATION AGE**

This section aims to discuss issues or factors that may lay the basis for arguments against or for changing roles of librarians at the University of Nairobi. The section deals with types of information resources in the library; technical services offered in the library; library services available to employees at the start of their career; library functions and other library services that

have been discontinued in the library; how library functions/services have changed over time; changes in librarians' responsibilities over the last ten years; complexities of duties and responsibilities and time spent on discharging duties and/ or responsibilities.

### **5.3.1 Information resources available to the respondents at the start of their work**

According to the findings, the majority of the respondents who numbered 48 (88.9%) indicated that they encountered manual acquisition of print books while the same number of 48 (88.9%) indicated that they had manual subscription of journals and a further 45 (83.3%) respondents selected the manual subscription of library newspapers as one of the activities that they found in place when they were first employed in the sector. Manual subscription of periodicals was selected by 41 (76.0%) respondents. Twenty-eight (51.9%) selected acquisition of CD ROMS, 17(31.5%) selected acquisition of compact disks (CD) while online subscription of periodicals was selected by 12(22.2%) respondents. A few respondents who numbered 11(20.4%) reported online acquisition of library books and 11(20.4%) online subscription of journals respectively as services that they found in place when they were first employed. It can be summed up that most services and functions in the libraries in which the respondents were employed for the first time were largely conducted manually. Comparing the available resources today and the resources that were available to the respondents when they started work (see section 4.5.2), there is an indication that the functions as well as processes and procedures have changed in view of the current information age and given the shift from manual based to electronic based functions. Nevertheless, there are those staff members who started working when those services were already automated but that constitutes the minority. A study conducted by Ticker (2009) concurs with this report and reports that before the advent of computer and communication technology (ICT) in India, the academic library services were manual while the library collections were print dominant.

### **5.3.2 Technical services available to the respondents when they were first employed**

Respondents were also required to indicate the available technical services to them when they first joined the profession as workers. The findings from table 5 revealed that 52(96.3%) respondents selected manual cataloguing and classification of library materials, 44(81.5%)

revealed that they had manual indexing of library materials while 43 (79.6%) selected manual abstracting of information materials. Thirteen (24.1%) respondents mentioned that online cataloguing and classification of library materials was present, 6 (11.1%) selected online indexing of library materials while the minority, 4 (7.4%), indicated that they had encountered online abstracting of information materials as they joined the profession. From the findings, there is evidence that before the launch of Vubis Smart as a library management system, most technical services were basically manual as opposed to electronic (see section 4.5.2). However, the changing of responsibilities as revealed in this study are extensions of traditional roles. This pattern calls into question the type of skills required on the part of librarians. It has been observed by Orime (2008) that today's library and information professionals need to be multi-skilled in order to respond to the changing demands of the working environment and make the most of the opportunities available.

### **5.3.3 Library services available to the respondents when they were first employed**

Traditionally, libraries offered circulation services, interlibrary loans, and library instruction, among other services. Users had to physically visit the library building to acquire services such as registration, borrowing and returning information materials, make book reservations, reference service, indexing and abstracting, selective dissemination of information (SDI) and current awareness service (CAS) just to mention a few. The respondents were asked to identify, from a list, the library services that they encountered when they were first employed in the sector. The findings revealed that 54 (100.0%) encountered registration and identification of library users as well as lending and returning of information materials. This was followed closely by fifty-three (98.1%) respondents who indicated that they had interlibrary loan service while 49 (90.7%) revealed that a manual catalogue was in existence when they were first employed in the sector. Face-to-face referencing was selected by 48 (88.9 %) respondents while user education and weeding of information materials were each selected by 46 (85.2%) respondents. Forty-five (83.3%) respondents pointed out that manual stocktaking was present at the time the respondents were first employed while forty-three (79.6%) respondents selected current awareness service (CAS). It is safe to say that the library services that were present at the time when the respondents started working in the sector were largely offered manually. This

contributed to the slow delivery of services as opposed to services that are now being offered electronically. Information literacy was encountered by slightly less than half of the respondents, and was also known by other names such as orientation, library education and tours, etc which took a form different from information literacy. Library instruction programs are offered to improve the students' ability to use library collections and services effectively. This includes the full range of information and knowledge resources (ACRL, 2010). Delivery of information literacy instruction to students has become progressively more important due to the proliferation of electronic resources and the increased usage of the internet as an information source. Librarians now play a more important teaching role, directing students to high quality print and electronic sources and educating them on the need to evaluate web resources. This finding supports that of Li et al.'s (2007) suggestion that librarians' shift of focus from providing technical assistance on using library resources to user education has assisted students in developing information literacy skills to identify the information needed, locate it, evaluate and use that needed information effectively.

#### **5.3.4 Library functions and other library services that have been discontinued in the library**

According to the findings on information resources which have been discontinued, the majority, 40(74.1%), of respondents pointed to manual subscription of journals. This is evidenced by the fact that it has the highest response rate followed by 33(61.1%) respondents who selected manual subscription of periodicals while 27(50.0%) indicated that acquisition of compact disks (CD) has been discontinued. Twenty-three (42.6) respondents reported that CD ROMS no longer exist in their libraries. Five (9.3%) reported that they now acquire journals online while 4(7.4%) indicated online subscription of newspapers. No one selected online acquisition of library books, acquisition of digital books, and manual subscription of library newspapers, and online subscription of periodicals. The analysis of the results indicates that most of the functions which have been discontinued are basically manual apart from the acquisition of CDs. This is a reflection of how the roles of the librarian have changed from manual based services/roles to electronic based services/roles.

Respondents were asked which library services have been discontinued in their libraries. The majority of forty-six (85.2%) respondents said that the manual catalogue has been discontinued and replaced by the online public access catalogue. Also discontinued was manual stocktaking which is being done electronically and was reported by 33(61.1%) respondents. Manual subscription of journals has been discontinued due to the fact that most journals are going online as well as most companies require payments through online means. This also applies to manual subscription of periodicals. Eight (14.8%) reported that the interlibrary loan service and bibliographic instructions have been discontinued respectively. Seven (13.0%) respondents mentioned discontinued manual weeding of information materials while 3(5.6) indicated face-to-face referencing, reservation/recall service:3 (5.6), and selective dissemination of information3 (5.6) has also been discontinued. A further 2(3.7%) respondents indicated information literacy and user education, 2(3.7%), have been discontinued; however, I disagree with the discontinuation of these two because library users must be taken through user education programmes and taught information literacy to enable them to find their way within the library while the minority numbering 1(1.9%) respondent indicated that internet training to library users, current awareness service and marketing of library resources have been discontinued. No one selected registration and identification of library users, lending and returning of information materials, email service, online searches, OPAC, online reference services, searching of electronic databases, instant messaging, LinkedIn service, electronic stocktaking, electronic weeding of information materials and Ask the librarian service as library services which have been discontinued. A follow up question was posed to the respondents to further find out if there was any other service that had been discontinued but was not provided for in the questionnaire. Manual taking of statistics was indicated but the same is being carried out electronically. Observably, the services have not ceased, but what has changed is the way those services are being offered from manual based to electronic based. CD-ROMs have been discontinued because the emergences of new technologies which are not compatible with the way services were offered before.

From the findings, there is evidence that the manual catalogue has been discontinued and replaced by OPAC. However the manual catalogue acts as a backup when the OPAC system is

off. Stocktaking is now being done electronically. As for information literacy, it seems like librarians have not embraced it as we had hoped. As argued by Heidi and Genius (2009) who have been quoted as saying that while instructional work is important, librarians are not universally accepting their instructional roles. Heidi and Genius go further to say that previous research suggests ambivalence, and sometimes hostility towards instruction, and in particular academic librarians who have been interviewed concerning their relative responsibility for teaching information literacy have revealed a degree of discomfort with instructional work arising from insufficient preparation, insufficient resource allocation and dislike for teaching (Heidi and Genius, 2009).

Respondents were asked to indicate the technical services that had been discontinued in their libraries. Forty-two (77.8%) respondents named manual cataloguing and classification of library materials, 37 (68.5%) respondents selected the manual indexing of library materials while 35 (64.8%) said that manual abstracting of information materials have been discontinued. It was surprising to note that online cataloguing and classification of library materials as well as online abstracting of information materials were selected as having been discontinued. In my opinion, these services would not have been selected because, currently, they form part of the automated services. There is a possibility that the few respondents who selected those services did not know what they were saying or probably they did not understand the question that they were asked.

### **5.3.5 How library functions/services have changed over time**

Mohsenzadeh and Moghaddam (2008) explain that rapid developments in ICTs and their wide applications in all aspects of everyday life have led to dramatic changes which have not been observed before. Nyamboga (2002), Kemparaju (2002) and Webster (2009) corroborate with Mohsenzadeh and Moghaddam's statement by saying that information technology has entered into libraries, especially academic and research libraries, to speed up their daily activities and reduce their operation costs. Library activities and loan systems have been upgraded by ICTS and traditional materials and sources replaced by digital equivalents which have made libraries undergo fundamental changes in all aspects. Findings in this study seem to support the aforementioned statements as the majority of the library functions/services have changed

tremendously over time given the shift from a manual based system to an electronic based system. For instance, 35(64.8%) respondents strongly agreed that access to the catalogue has changed overtime, 33(61.1%) reported that literature searches for clients have also changed over time. Other services or functions that were reported to have changed over time include current awareness service, acquisition, cataloguing, and charging and discharging of library materials. The majority of the respondents also agreed that classification and information literacy have changed while weeding as well as bibliographic instruction have remained unchanged. When asked to what extent some of these functions have changed, respondents identified the following as the services that have greatly changed over the last ten years: access to catalogue (61.1%), registration and identification of users (59.3%), literature searches (53.7%), and charging and discharging (51.9%). The interviews, too, revealed that acquisition librarians now subscribe to electronic journals, electronic books and other online databases as opposed to the previous print journals; the manual card catalogue was converted into OPAC for easy accessibility; circulation services are now automated as opposed to the previous card system of lending books; and cataloguing and classification is now done online as opposed to the previous manual cataloguing and classifying of books. Reference service, especially “Ask the librarian service”, is done online as opposed to the face-to-face reference service provision methods (although some respondents said that they still offer face-to-face reference services to some clients). In a nut shell, the library functions have greatly changed in the last ten years and there is now faster access to information. The findings in this study concur with those made by Cardina and Wicks (2004) on the changing roles of academic reference librarians over a ten-year period to assess the role changes that occurred for academic librarians from 1991 to 2001.

### **5.3.6 Changes in librarians’ responsibilities over the last ten years**

Godden (1991) argues that information communications technologies (ICTs) have induced a paradigm shift in libraries which include the shift from traditional libraries to digital libraries, print on paper to digital information, use of online classification schemes, card catalogues to web based OPACs, and circulation services have changed from traditional charging and discharging to remote login to use of RFID machines. These changes imply that there is either an increase or a decrease in the volume of responsibilities. However, from the findings of this study, it was

found that the increase/decrease in the volume of responsibility of various functions performed in the library is relative to the functions performed or services offered. The argument here is that there could be a decrease in responsibility for some functions like cataloguing and classification which was selected by 12 (22.2%) respondents, probably because of fewer print materials for processing given the subscription to e-journals and e-books. The same may apply to the work put into interlibrary loan services, which has somewhat decreased because of online lending and librarians don't have to move physically from one library to another. The amount of responsibility on stocktaking and indexing was reported as having decreased. Respondents indicated that the volume of responsibility has increased because librarians now have to liaise with faculties and class representatives to discuss library matters, attend board meetings, search information online for the users, organize library orientation and information literacy classes, and respond to emails from resident lecturers who consult on various matters when need arises.

### **5.3.7 Complexities of duties and responsibilities**

When asked to state whether or not their duties/responsibilities have become more or less complex, many librarians, i.e. 19 (35.2%), indicated that duties and responsibilities were not complex while 17 (31.5%) indicated that duties and responsibilities have become somewhat complex when compared to the past. Ten (18.5%) respondents agreed that duties and responsibilities were complex while 8 (14.8%) believe that duties/responsibilities have become very complex. The interviews conducted with the library directors, however, revealed that complexities of duties/responsibilities for librarians could be attributed to co-coordinating and streamlining of extra-mural centres alongside running their major branch libraries. Others attributed complexities to teaching of information literacy, which was quoted as an issue of concern. Another complexity was associated with giving feedback to users who pose questions through "Ask the librarian service". Usually users expect feedback at the earliest time possible and where feedback is delayed, it casts doubt on the librarian's capability and ability regardless of how much he is dealing with.

### **5.3.8 Time spent on discharging duties and/or responsibilities**

Librarians were asked to state the approximate time spent on discharging duties/responsibilities as a way of determining whether changes in their work can be associated with the time of completing tasks or discharging their duties and responsibilities. The findings revealed that the majority, 36(66.7%), of the respondents indicated that they spent less time discharging their duties/responsibilities, 15(27.8%) felt that more time was spent discharging duties/responsibility, 1(1.9%) respondent was undecided while another 1(1.9%) did not know whether or not he/she spent more or less time discharging his/her duties.

Spending less or more time in discharging duties/responsibility highly depends on the task that each librarian is handling and the level of training that one has acquired to carry out that task in an electronic environment. Librarians who are conversant with the library management software may require less time discharging their duties/responsibilities while those who are still in a learning phase may require more time. Also, depending on the hours in which librarians are supposed to work, they may find themselves working for extra hours due to the nature of the duties that may require more time to accomplish.

A follow up question was asked to gauge whether the respondents would require more or less time to execute their duties/responsibilities. The findings revealed that the majority, numbering 29(53.7%) respondents, stated that they needed more time to execute their duties/responsibilities, 21(38.9%) believed that they needed less time, 2(3.7%) were undecided and 2(3.7%) did not know whether or not they needed less or more time to discharge their duties/responsibilities respectively. It can therefore be argued that whether librarians needed more or less time to execute their duties/responsibilities depends on a number of factors such as the number of tasks they are expected to perform, their competencies and skills, experience, and so on. As mentioned above, it also depends on the familiarity of the librarian with the library management software and level of training notwithstanding.

#### **5.4 COMPETENCIES AND SKILLS REQUIRED OF LIBRARIANS IN THE CURRENT INFORMATION AGE**

This section discusses the findings obtained from respondents in respect to the most valuable competencies and skills that were required prior to the introduction of ICTs; competencies and skills that have increasingly become important after the introduction of ICTs; the extent to which various competencies and skills have improved the provision of services; and, finally, how librarians' competencies and skills have changed over time.

Different authors have defined competencies in somewhat different ways. Dessler (2008:155) defines competencies as a demonstrable characteristic of the person that enables performance of a job. Competencies as defined by Evaul (2007:146) are a combination of skills, knowledge and behaviour patterns vital to organisational success, personal achievement and career development. Orme (2008) argues that there is considerable need to research on the existing skills and competencies required by librarians and other information professionals by first examining their functions and roles. The current study found that the most valuable competencies and skills in the libraries before the introduction of ICTs were basic principles of librarianship and, more so, organization of recorded knowledge, knowledge of information resources and the foundations of the profession as well as competencies in the area of reference and user services. Thirty-two (59.3%) respondents felt that competencies in administration and management were also valuable. On the other hand, skill as defined by the Business Dictionary (2012) is an ability and capacity acquired through deliberate, systematic and sustained effort to smoothly and adaptively carry out complex activities or job functions involving ideas (cognitive skills), things (technical skills), and/or people interpersonal skills). Elkin (2008) argues that it is widely agreed that both professional and generic skills are essential to the librarian and other information professionals; traditional skills need enhancing by IT, management and leadership skills allied to significant personal skills. To achieve this, Partridge and Hallam (2004) note that the librarians and other information professionals need to acquire and develop both sets of skills throughout their career. These then can be applied in a wide range of environments, both traditional and non-traditional, enabling the individual to adapt and respond to changing circumstances (Brine, 2004). It was not surprising to find that the majority of respondents numbering 51(94.4%) indicated that

communication skills were the most valuable skills before the introduction of ICTs in libraries followed by information retrieval skills, cataloguing and classification skills. Other librarians indicated listening skills were the most valuable skills while others selected decision making skills. These skills are still regarded as important for librarians to execute their duties and responsibilities.

The emergence of ICTs has meant that the librarians adopt or get re-skilled on various aspects, particularly those related to ICTs. Most respondents identified the following as the competencies and skills that have become increasingly important with the introduction of ICTs: competencies and skills associated with technological knowledge, basic computer literacy, internet, metadata, classification and cataloguing, and information retrieval. The interviews with the library directors concurred with the other librarians and hastened to add the following as the other competencies and skills which have become increasingly important after the introduction of ICTs: good general IT skills and proven ability to learn new applications and understanding of the library management software. It was, however, noted that the traditional services that demanded specialized skills are still regarded as areas within which librarians require special skills. These include cataloguing and classification, reference services and library instruction.

With regard to the extent to which current competencies and skills have improved service provision in libraries, the majority of respondents (i.e. 44 or 81.5%) indicated skills associated with the use of the internet have improved service provision in libraries to a very great extent. The respondents felt that the internet is a source of current and timely information and, besides, it is used for information searching, used to send emails as well as for networking with friends using Facebook, Twitter, MySpace, etc. Other skills that have improved service provision to a great extent include problem solving skills and administration and management skills. The librarians argued that the aforementioned skills have made librarians more visible and users can now see the products and services they are offering. ICT skills have made searching online easier and librarians can now get comprehensive and a wide range of information to satisfy user needs. This has, however, come with additional responsibilities but the bottom line remains that users

can now access online resources independently after being taken through information literacy classes.

Figure 8 in chapter 4 see (4.4.5) provides responses to the question on whether or not the competencies and skills of librarians have changed with the introduction of ICTs in the library. The findings revealed that the majority of respondents, numbering 50(92.6%), indicated that the competencies and skills required at this information age have, to a great extent, changed as a result of the introduction of ICTs in their library while a minority who numbered 7 (13.0%) indicated that the competencies and skills have changed slightly. This finding concurred with the observation made by Alidousti and Sheykh-shoae (2006) to the effect that information technology has changed performance, skills, and information needs of librarians. Traditional roles and methods have been replaced by new ones. On the other hand librarians must move with the digital pace to keep abreast with the fast changing technologies so as to be on par with the users who are technology savvy.

#### **5.4.1 Skills needed in libraries for effective service provision**

Having observed that librarians' skills and competencies have changed as a result of ICTs, we sought to find out if there are skills that the respondents felt were needed for effective service provision. The study revealed that all respondents indicated that information retrieval skills were the most needed skills for effective service provision in libraries, followed closely by basic computer skills (52 or 96.3%), emailing skills (49 or 90.7%), information literacy (48 or 88.9%), internet skills (48 or 88.9%), and cataloguing and classification (45 or 83.3%). It is worth noting that Philbin (2012) had opined that information retrieval and dissemination of information are a vital part of the skills needed by librarians and information and knowledge management professionals. Information retrieval skills are essential to both the librarian and the users to enable them know how to retrieve relevant information for their use. Basic computer skills are a requirement especially at the UoN where a library management system is in use. Librarians require computer skills to be able to send emails to users and colleagues and also for internet searching. Information literacy is essential to libraries because the provision of the right information to the right person at the right time is the key to success for any organization (Brun,

2009). Management skills are also very important although librarians have taken it for granted. Librarians need to manage their staff. On the other hand, budgeting, which was identified as a skill that is needed, is also important because librarians require basic financial skills since there is budgeting involved in library work.

## **5.5 EFFECTS OF INFORMATION AND COMMUNICATIONS TECHNOLOGIES (ICTS) ON THE ROLES OF LIBRARIANS**

Most of the discussions that have been made above relate, in one way or another, to the factors that may be contributing to the changing roles of librarians at the UoN. Most of the changes seem to be associated with the emergence of ICTs. It is therefore necessary to briefly discuss the types of ICTs that have had a profound effect on librarians at the UoN.

Firstly, respondents were asked whether or not they were aware of any ICTs in their jurisdiction. All the respondents said that they were aware of the existence of ICTs in their places of work. This is an important finding because the researcher believes that one has to be aware of the ICTs and their operations so as to make optimum use of the same. A follow up question was posed to find out the type of ICTs and ICT-driven library services available in the libraries. The study revealed that the highest responses were recorded in the period 1991-2000 wherein CD-ROMs were the main ICTs available in libraries. Other ICTs and ICT-driven services that received a high response rate for the period 1991-2000 include compact disks and computers. The least available ICTs and ICT-driven services were library management software, electronic journals, electronic books, library online databases, online user education/tutorials, digital repository, online searching, library websites, electronic libraries, electronic/virtual reference services and electronic document delivery. During this period, the UON was using the mainframe computer to store information while desktop microcomputers were used for day-to-day operations. The library had only one printer networked and it was available only in the computer room. Besides, there were CD ROMs and floppy diskettes which were stored in the ICT centre. It can be argued that most of the ICTs that are currently available in the market and more particularly in libraries were not available during the 1990s.

Between 2001 and 2010 the library management software, internet, email, and the OPAC received the highest response rate. The least of the ICTs and ICT-based services was digital repository, which was selected by 17 (31.5%) respondents. The interviews revealed that, during this period, a server in the main campus library (CHSS) got a dedicated system and that's when the university got an independent ICT expert who could help with IT-related matters. This enabled the library to get a dedicated software, namely Vubis Smart. A computer lab was established in 2009 in every branch library, a situation that facilitated access to the internet and email, hence the high ranking of the two. Besides, the university introduced scanners and photocopiers. The library director also informed the researcher that it was during this period that the University subscribed to the Kenya libraries and information services consortium (KLISC) of which the College of Humanities and Social Sciences is the regional coordinator. This has also enabled the University to subscribe to e-journals, e-books, various online databases, for example HINARI, PERI, the LEXIS and NEXIS. From the findings there is an indication that the majority of ICTs became available between 2001 and 2010.

The highest number of responses was recorded for electronic books, library online databases, library websites and electronic delivery of documents in the 2011-2013 period. The least available ICTs and ICT-based services were compact disks and CD ROMs. We believe that this trend is the current status in libraries, namely CDROMs and compact disks have disappeared from the library shelves as they are being replaced with online information resources, such as databases.

As a follow up on the effect of ICTs in libraries, respondents were requested to indicate the extent to which ICTs have positively or negatively impacted on the way libraries conduct their businesses. It was found that the use of communication technologies (ICTs) has made the library and librarians more visible and has increased demand, putting libraries on the world map. Users can now have more access to resources. There are more hits on the website (indicating the library's visibility) including from people living outside of the country, namely Kenya. When asked to state which ICTs that have impacted on their delivery of library services, it was surprising to note that CD ROMs were rated the as the most influential compact disks (CDs).

This could imply that the ICTs were highly regarded by the librarians who had used them to deliver services to clients during the time when they were in high demand. The advent of modern ICTs has opened up new opportunities for greater cooperation among libraries. Electronic resources have further facilitated information exchange. It is now possible for the users of collaborating libraries to access and/or download the required materials remotely. The majority of respondents felt that the online public access catalogue (OPAC) has had a tremendous positive impact. Respondents also reported that ICTs have strengthened the interlibrary loan system between libraries that share resources because institutional repositories have also contributed globally to information needs. Use of ICTs has led to easy execution of current awareness service (CAS) because it is now easier to put on the web and email many people at one time. This has led to easy and faster dissemination of information. Book selection has also proved to be fairly convenient.

On the negative impact of ICTs, there was a complaint from the college librarian at the CHS to the effect that the college website takes long to upload current events. He expects that as soon as events unfold, they are supposed to be captured on the library website which is not the case. He further gave an example of the training he had conducted on QPULSE which took too long to be uploaded. QPULSE is used as a training manual for Quality Management System at the UoN libraries. It was further revealed that the internet speeds are disappointing at times and require some upgrading. There are also instances of power failure with no backup in place as was revealed by the college librarian of CEES. It was noted with concern that with ICTs in place users are independent but have no searching skills, lack a platform for searching all databases at once and therefore only concentrate on one due to lack of searching strategies. With the information explosion in place, users are left in a state of confusion. Another negative impact of ICTs on the way business is conducted in the library is that due to the presence of ICTs, staff have relaxed and let go of their professional responsibilities. For instance, it is not uncommon to find cataloguers' just copying and pasting metadata or bibliographic information from OPACs of other libraries without engaging with the content or text being catalogued.

As a follow up to the above aspect on the impact of ICTs, the respondents were asked to state whether or not the roles of librarians have generally changed as a result of ICTs in the last ten years. The findings were not that surprising given the overwhelming support for ICTs at the UoN. A total of 51(94.4%) respondents believe that the roles of librarians have generally changed over the last ten years as a result of technology while 3(5.6%) respondents said that their roles have not changed. Agreeably, the roles of academic librarians at the University of Nairobi have changed tremendously given that they have moved away from traditional services. Most functions like acquisition, cataloguing and circulation modules are fully automated. It is however noted that librarians still perform their roles as custodians of information resources. They also organize the resources for easy access and use. Reliance on ICTs to perform many duties and carry out responsibilities at the UoN was noted.

## **5.6 CHALLENGES FACED BY LIBRARIANS IN THEIR NEW ROLES**

The following were identified to be the major challenges which librarians at the UoN face:

**Staffing:** people are an organization's most valuable resource and, if managed appropriately, provide livelihood to the organization. If managed inappropriately, the workforce becomes an expensive commitment that leads to few rewards and many problems (Haneefa, 2007; Igben and Akobo, 2007). The study found that the library system at the University of Nairobi has for a long time experienced low staffing levels; the few librarians available are overworked, have low morale and are not motivated. The University library has also experienced high staff turnover due to poor pay. Their pay is not commensurate with the work done by each librarian. This finding is consistent with those of Marouf and Rehman (2005). A similar problem has also been reported by other researchers (e.g. Haneefa, 2007; Igben and Akobo, 2007).

**Acquisition of print resources:** Appropriate and sustainable development of collections is one of the key issues in the operations of a university library. The study established that due to centralized acquisition of information resources by all college libraries, there is usually a delay because of late approvals from the procurement department. Besides, librarians also complained that they often receive requests for acquisition from faculty members much later which delays

the process of acquisition. This means that librarians have to wait a little bit longer before they can acquire library resources and the end result is that resources are not acquired on time. According to the University of Nairobi service charter, the process of acquisition is supposed to take a maximum of 60 days. This means a resource is to be acquired, processed and put on the shelf for use within 60 days which has proved unachievable due to the delay experienced at the procurement department.

**Budget:** The study also established that according to the University of Nairobi policy, 10% of the University budget is supposed to be allocated to the library. This has never been the case; instead, the libraries are usually allocated 1% of the University budget making it difficult to acquire more ICT equipment, peripherals, and connectivity.

**Lack of recognition by policy makers (University's Senior Management):** The study revealed that policy makers have low regard for librarians and they regard librarianship as a low profile profession.

**Marketing skills:** Other than the University Exhibitions, librarians don't market their products to the users effectively. They still lack the skills of reaching out to their users.

**Changing needs of the users:** Librarians have taken a long time to embrace technology. There are technological changes, particularly the social media where you find that some librarians are not even on Facebook or other group social networks. Users that libraries serve have a variety of dynamic needs. The characteristics of the 21<sup>st</sup> century library users are such that they require information for personal development, for example, they need information to enrich themselves and remain relevant to their society, career and organization. Secondly, they need to know what is going on in their government and their country and therefore they want to keep abreast with government policies, plans and how they affect them. The same user will require information on how to stay healthy. Others require knowledge or information in order to know what to do at any point in time. Last, but not least, every professional requires up-to-date knowledge in his chosen

profession. All these demands are different from those who look for information for academic purposes.

Due to librarians lack of training and continuing education programs in the field of ICT, librarians have been unable to satisfy some user needs due to their complexity and dynamism which requires that librarians be more knowledgeable on how to analyse their information needs and use the basic and advanced search engines effectively.

Organizing online information resources is a challenge to many librarians. This is as a result of complexity of information resources due to the information explosion. Usually cataloguers do not include table of contents while cataloguing books online. This becomes a big oversight that gives users a hard time in wanting to know the contents of the book during retrieval.

The Vubis Smart library management system in use at the UoN library has frequent breakdowns. This has contributed to users' time being wasted. Library staffs also waste a lot of time on social media chatting and skyping instead of working. This affects the end user and the organization as a whole. Ranganathan's 4th law of library science advocates for users' time to be saved.

## **5.7 CHANGING ROLES OF LIBRARIANS WORK**

This section examines other challenges faced by librarians in view of time spent, workload and complexities associated with carrying out their duties and responsibilities.

### **5.7.1 Time spent in carrying out their duties**

Respondents were asked a question: in your opinion, would you say you have challenges in terms of the following indicator: Time spent?

The findings revealed that 10(18.5%) respondents felt that the time spent on user instruction had greatly increased, 9(16.7%) respondents were of the opinion that teaching information literacy had slightly increased while 29(53.7%) felt that the time spent on weeding of materials remained the same. A total of 22 (40.7%) respondents indicated that time spent on marketing of library

resources has slightly decreased. Most respondents, 37(68.5%), felt that the time spent on circulation of resources has greatly decreased. Other indicators in which respondents felt that time has greatly decreased included accessing the catalogue (32 or 59.3%), and registration of members (33 or 61.1%). Despite the increased workload, time spent to accomplish the task is less. The librarian now takes less time to satisfy the needs of the users. Besides, each activity hardly takes much time. Within only a few minutes, the user gets results.

### **5.7.2 Workload for librarians**

The respondents were further prodded to state whether or not their workload has increased over time. The findings revealed that 11 (20.4%) respondents felt that the workload on literature searches for clients had greatly increased. Ten (18.5%) respondents were of the opinion that marketing of library resources had slightly increased while 24(44.4%) felt that the workload on weeding of materials remained the same. A total of 19(35.2%) respondents felt that workload on indexing had slightly decreased. Other indicators in which respondents felt that the workload had slightly decreased included teaching information literacy (19 or 35.2%), stocktaking (19 or 35.2%), and marketing of library resources (19 or 35.2%). The majority (38 or 70.4%) of respondents felt that the workload on registration of members had greatly decreased followed closely by circulation (37 or 68.5%) and accessing the catalogue (35 or 64.8%).

The findings also revealed that the electronic environment has increased the volume of work for librarians, for instance, responding to emails and conducting online searches. However, despite this increase, librarians are assisted by computers which have made it possible to clear backlogs. The workload has also increased in terms of opening hours which have been increased due to user demands. The University is also looking to opening the library 24 hours per day.

## **5.8 SUMMARY OF THE CHAPTER**

This chapter discussed results that were presented in chapter four. The results of the structured interview were generally consistent with that of the questionnaire survey. The findings in both cases revealed that most respondents started working when library functions were basically manual.

Comparing the available resources today and the resources that were available to the respondents when they started work, there is evidence that functions as well as processes and procedures have changed in view of the current information age and the roles of librarians have indeed changed given the shift from manual based functions/services to electronic based functions/services.

The analysis of the results indicates that most functions/services which have been discontinued from the libraries are basically manual and have been replaced by electronic ones. Therefore it is prudent that librarians get the right skills in order to respond to the changing demands of the working environment and make the most of the opportunities available.

The current study found that the most valuable competencies and skills in the libraries before the introduction of ICTs were basic principles of librarianship and, more so, organization of recorded knowledge, knowledge of information resources and the foundations of the profession as well as competencies in the area of reference and user services.

The findings of the study also revealed that most of the changes in the roles of librarians are associated with the emergence of ICTs and ICT-driven library services available at the UoN library. The study identified several challenges that librarians face. These include but are not limited to staff shortages, delays in acquisition of print resources, limited library budget, lack of recognition for librarians by university senior management, lack of marketing skills on the part of librarians, the changing needs of users, lack of training and continuing programs for librarians in the field of ICTs, frequent breakdowns of Vubis Smart as a library management system and waste of user's time by library staff.

The next chapter- chapter six - presents the summary of the findings, conclusions and recommendations of the study.

## **CHAPTER SIX: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **6.1 INTRODUCTION**

This chapter provides the summary of the findings and the conclusions of the study. The chapter also provides suggested recommendations based on the objectives of the study as well as recommendations for further research.

The main aim of the study was to explore the changing roles of academic librarians at the University of Nairobi and its constituent college libraries in the current information age. The study was guided by the following objectives:

1. To find out the extent to which the functions as well as processes and procedures in libraries have changed in view of the current information age;
2. To examine the competencies and skills required of librarians in the current information age;
3. To determine the effects of technology on the roles of librarians;
4. To establish the challenges facing librarians in their new roles; and
5. To recommend measures that will help librarians overcome the challenges.

The study employed both qualitative and quantitative approaches, which allowed the researcher to collect data from 54 members of library staff using a questionnaire and nine members of the university management using a structured interview. The use of both approaches was important because they supplemented each other.

### **6.2 SUMMARY OF THE FINDINGS**

The research findings are summarized under the following sub-headings:

- Extent to which library functions as well as processes and procedures have changed in the current information age
- Competencies and skills of librarians in the current information age
- Effects of ICTs on the roles of librarians in the information age
- Challenges facing librarians in their new roles

- Recommended measures that will help librarians overcome the challenges in the current information age.

### **6.2.1 Extent to which library functions as well as processes have changed in the current information age**

The study found that majority of the respondents (i.e. 88.9%) encountered manual acquisition of print books and manual subscription of journals when they started work. A minority (7.4%) indicated online subscription of newspapers. Those who selected manual cataloguing and classification of library materials as technical services available to them when they started work accounted for 96.3% while the minority (i.e. 7.4%) indicated that they had encountered online abstracting of information materials as they joined the profession. In terms of library services, the majority of the respondents (i.e. 100.0%) selected registration and identification of library users and lending and returning of information materials. Electronic weeding of information materials (3.7%) received the least number of responses. The study further found that 74.1% of the respondents indicated that manual subscription of journals was discontinued followed by manual subscription of periodicals (61.1%) and compact disks (50.0%). A total of 77.8% of the respondents selected manual cataloguing and classification of library materials as technical services which have been discontinued while the minority, numbering 1.9% respondents, indicated that online abstracting of information materials has been discontinued.

It was found that 85.2% of the respondents indicated that the manual (card) catalogue has been discontinued and replaced by the online public access catalogue (OPAC). Also discontinued was manual stocktaking which was reported by 61.1% respondents. Another service which was discontinued was manual taking of statistics which is now being carried out electronically.

The study revealed that most of the library functions/services have changed tremendously over time given the shift from manual based services to electronic based services. The majority of the respondents (i.e. 85.2%) strongly agreed that access to the catalogue for clients has changed overtime. A considerable number of respondents (i.e. 61.1%) strongly agreed that literature searches for clients have also changed over time. Equally viewed as having changed were

registration and identification of users (59.3%) and charging and discharging (51.9%) of library resources.

The study revealed that the increase or decrease in the volume of responsibilities of various functions performed in the library is relative. However, 63.0% of respondents indicated that online searches have greatly increased, 33.3% of the respondents believed that the volume of work related to acquisition and bibliographic instruction have somewhat increased while others indicated that abstracting, cataloguing and classification had greatly decreased as a result of the ICTs. The study further revealed that 35.2% of the respondents believe that duties and responsibilities were not complex. For those interviewees who felt that duties and responsibilities have become complex, they attributed it to coordinating and streamlining of extra-mural centres alongside running major branch libraries, teaching information literacy and giving feedback to user queries through “Ask the librarian service”. In terms of the time it takes for tasks to be accomplished, it was found that 66.7% of respondents spent less time discharging their duties. However, it was also noted that spending less or more time depends on the tasks that each librarian is handling and his/her level of training in carrying out that task. It was further found that 53.7% of the respondents needed more time to execute their duties/responsibilities despite the availability of ICTs. This, nevertheless, depends on tasks each librarian is handling and his/her level of training in carrying out that task.

### **6.2.2 Competencies and skills of librarians in the current information age**

In terms of competencies and skills that librarians required before the introduction of ICTs in the library, it was found that organization of recorded knowledge and information (94.4%) was the most valuable competency. Equally valuable were communication skills which were selected by 94.4%.

The study further revealed that respondents who accounted for 83.3% felt that technological knowledge and basic computer skills followed closely by internet skills (81.5%) have become increasingly important in the library after the introduction of ICTs. Other skills which has

become increasingly important include proven ability to learn new applications and understanding of the library management software.

When asked which of the ICT-based skills have improved service provision, the 81.5% of the respondents said that internet skills have improved service provision in libraries to a very great extent. Other skills that were identified by the respondents include: basic computer skills (72.2%), technological knowledge and skills (66.7%), and emailing skills (66.7%). Basically ICT skills have made searching online easier and librarians can now get comprehensive and a wide range of information to satisfy user needs. As for the most needed skills in this information age, the libraries selected the following: information retrieval (100%), computer skills (96.3%), emailing (90.7%), and information literacy (88.9%), internet skills (88.9%) and cataloguing and classification (83.3%).

### **6.2.3 Effects of information and communication technologies on the roles of librarians in the information age**

In terms of awareness of information technology available in the library all respondents indicated that they are aware of ICTS available in the UoN library. When asked to identify ICTs that were available in the library, the respondents reported that CD-ROMs were the main technologies available in libraries, most prominently between 1991 and 2000, followed by compact disks which attracted a response rate of 70.4%, and computers (51.9%). Between 2001 and 2010 the highest responses were recorded for library management software (94.4%), the internet (90.7%), email (90.7%) and OPAC (90.7%). The least was digital repository, which was selected by 31.5% of the respondents. Between 2011 and 2013 the highest number of responses was recorded for electronic books (i.e. 98.1%), library online databases (98.1%), library websites (98.1%) and electronic delivery of documents (98.1%). The study further found that all (100%) respondents indicated that computers and the internet (100%) have become very important ICTs in the library. This was followed closely by the online public access catalogue (94.4%) and online searching (90.7%).

The findings of the study revealed that 29.6% of the respondents believed that CD-ROMs have positively impacted to a very great extent. The majority of ICTs were considered to have had an impact to some extent, little extent or very little extent. The findings of the study revealed that only 1.9% selected online library cooperation and resource sharing as having impacted negatively to a very great extent. The majority (77.8%) indicated library websites as having impacted negatively to a very little extent. The findings revealed that 70.4% of the respondents strongly agreed that they were happy and motivated. The minority (24.1%) of respondents strongly disagreed that they were threatened by technology.

In terms of whether or not librarians' roles have changed as a result of technology in the last ten years, 51(94.4%) of the respondents believed that the roles of librarians have generally changed over the last 10 years as a result of technology while 3(5.6%) respondents said that their roles have not changed.

In terms of level of agreement on feelings about the introduction and usage of ICTs, 38(70.4%) of the respondents strongly agreed that they were motivated and happy, 22(40.7%) agreed that they were challenged, 16(29.6%), agreed that they were happy, 18(33.3%) strongly disagreed that they were unhappy while 13(24.1%) respondents strongly disagreed that they were threatened with technology.

#### **6.2.4 Challenges facing librarians in their new roles**

The study's findings revealed that 57.4% of respondents agreed that dynamic users with dynamic needs were major challenges. A further 57.4% referred to the complex issues that require intensive research, 57.4% to information literacy and 57.4% to marketing information resources as challenges that librarians face. A total of 33.3% of the respondents strongly agreed that retraining of staff was a major challenge. All the items listed in the questionnaire posted a higher response rate in terms of those respondents who generally agreed as opposed to those who disagreed.

Other challenges as viewed by the respondents included time spent doing work, the workload of librarians and complexities associated with work. Based on the aforementioned, the study revealed that 18.5% of respondents felt that time spent on user instruction had greatly increased. Most respondents (68.5%) felt that time spent on circulation of resources has greatly decreased. A minority of respondents (16.7%) were of the opinion that teaching information literacy had slightly increased.

About the workload for librarians, the findings of the study revealed that 20.4% of respondents felt that the workload on literature searches for clients had greatly increased. The majority of respondents (70.4%) felt that the workload on registration of members had greatly decreased followed closely by circulation (68.5%).

The study findings revealed that 7.4% of respondents felt that acquisition of library materials, teaching information literacy, literature searches for clients and marketing of library resources had greatly increased in complexity. The majority of respondents (83.3%) felt that complexities in circulation had greatly decreased.

Additional challenges which were provided by interviewees included the following: inadequate staff; delays in acquiring print resources; reduced budgetary allocation; lack of recognition of the librarians by the University's Management; marketing skills on the part of librarians; strategic management courses not offered by LIS schools; dynamic needs of users; complexity of resources due to information explosion; inability to satisfy complex user needs due to deficiency in training and continuing education programs in the field of ICT; librarians have to wait longer for acquisition lists from faculties before they can move forward; inadequate staff component in the library, which means that librarians are overloaded with work; there is frequent breakdown of Vubis Smart; and organizing online information resources is a challenge to many librarians due to the complexities and legalities involved and inadequate ICT facilities in the library.

### **6.2.5 Recommended measures that will help librarians overcome the challenges in the current information age**

The following are some of the recommendations that respondents proposed in order to overcome the challenges that they highlighted:

- Staff should be trained in the use of ICTs.
- Through the management, the library should acquire powerful servers to increase bandwidth connectivity.
- Librarians should be trained on how to organize resources online by use of the library management system (Vubis Smart).
- Libraries should have a centralized system of acquisition to enable them to acquire resources independently.
- More money should be allocated towards the acquisition of library resources.
- Acquisition librarians should liaise with the procurement department to hasten the acquisition process.
- The University management should hold regular workshops and short courses for library staff.
- Adequate funds should be allocated for training librarians.
- Librarians should carryout user surveys to determine user needs.
- Librarians should hold regular trainings and updates on emerging trends.
- The University management should set aside funds for carrying out research.
- Librarians should adopt new teaching platforms.
- The University should avail teaching resources/facilities to staff and students.
- Library staff should provide user education on a day to day basis.
- Library staff should train users on how to access information resources both print and non-print.
- Library staff should make users aware of the resources available to them by use of institutional websites, through university exhibitions and open days, and then benchmark with other university libraries.
- Librarians should participate in faculty board meetings.

- Librarians should use social networking sites such as Facebook, MySpace and Twitter as they have a unique opportunity to share and widen access to information resources and services.
- Librarians should inform the user population on new arrivals of information resources by use of methods such as notice boards, library web pages, email, cell phone communication, word of mouth, library catalogues, instant messaging, chat references, library orientation and user education.

It can be noted that some of these recommendations do have a bearing on the current study on changing roles of librarians at the University of Nairobi but nevertheless they summarize the feelings of the librarians.

### **6.3 CONCLUSIONS OF THE STUDY**

As it has been mentioned above, the study aimed at investigating the changing roles of academic librarians at the University of Nairobi and its constituent college libraries in the current information age. To achieve the objectives, the study sought to answer the following questions:

- i. What is the extent to which the functions as well as processes and procedures in libraries have changed in view of the current information age?
- ii. What are the competencies and skills of librarians in their changing roles?
- iii. What are the effects of technology on the roles of librarians?
- iv. What are the challenges faced by the librarians in their new roles?
- v. What measures can be put in place to help librarians overcome these challenges?

#### **6.3.1 Extent to which the functions as well as processes and procedures have changed in the current information age**

Comparing the available resources today and the resources that were available to the respondents when they started work, the study concludes that although the functions as well as processes and procedures at the UoN library and its constituent college libraries have remained the same, however the manner and intensity with which they are conducted has changed tremendously over time given the shift from manual based services to electronic based services. Specifically,

functions as well as processes and procedures have been enhanced in the current information age, especially in terms of the mode of delivery, format of resources, time spent on accomplishing tasks, and volume of work.

### **6.3.2 Competencies and skills of librarians in the current information age**

In reference to the research question on the extent to which the competencies and skills required of librarians have changed, it was established that information retrieval skills, technological knowledge, basic computer skills and internet skills were the most valuable skills after the introduction of ICTs in libraries. The extent of changes in the type of skills and competencies was indeed noted. As opposed to the traditional skills (e.g. critical analysis of information, communication skills, and managerial skills), the contemporary scenario largely requires computer and internet related competencies and skills on the part of librarians. The implication of this finding, therefore, is that librarians have been forced to learn new skills and obtain new competencies that will enable them to function effectively in the information age.

### **6.3.3 Effects of information communication technologies in the information age**

The study concluded that, as a result of ICTs, there were both positive and negative reactions. However, most of the librarians agreed that their roles have changed for the better given that they have moved away from traditional services and most of their functions are now fully automated. Most of them are happy and motivated as a result of the emergence of ICTs. Their roles can be executed with ease in the current information age.

### **6.3.4 Challenges that librarians face in their new roles**

This study concludes that there are diverse challenges that librarians at the UoN face in the information age. It was nevertheless worth noting that the librarians are aware of the solutions that can be implemented to overcome the challenges. The most outstanding challenges that were also closely linked to the current study on changing roles of librarians relate to the competencies and skills associated with ICTs.

### **6.3.5 Recommended measures that will help librarians overcome the challenges in the current information age**

A number of measures that can be applied to solve a myriad of challenges outlined by the librarians were provided by the respondents. Most of the solutions can be categorized as general solutions which, if implemented, will improve the functioning of the library and librarians. There were few solutions that touched on the role of libraries in the information age. These included training on the use of ICTs and equipping the library with appropriate technologies and ICT facilities.

## **6.4 RECOMMENDATIONS BASED ON THE FINDINGS OF THE STUDY**

This section provides recommendations based on the findings of this study.

- Information professionals are the backbone of any library; therefore, the university of Nairobi management should hire skilled information professionals with ICT competencies by offering attractive salaries and appropriate incentives.
- The University of Nairobi management should revisit and revise the acquisition procedure so that instead of having a centralized system of acquisition, each library should acquire resources independently.
- Sufficient funds should be made available for purchasing, upgrading and maintaining ICTs to increase bandwidth connectivity since the majority of the services are offered online.
- Strategic management as a subject should be included in the curriculum of every school that trains librarians because management is core as far as the librarians' changing roles are concerned. It has been revealed by respondents that librarians generally are not good managers. But for those who are already in employment, they can attend management classes in government training institutions.
- Librarians should take the initiative of keeping abreast with the current information technologies which change with times for them to meet the changing needs of their users and to also keep a breast with the emerging trends.

- Librarians should be trained or retrained on ICT applications through seminars and workshops to understand various search engines, and electronic resources discovery tools to enable them solve emerging issues.
- Librarians should be engaged in research to investigate how best they can meet the dynamic needs of their users.

## **6.5 RECOMMENDATIONS FOR FURTHER RESEARCH**

Following the findings of the current study, there is need for further research. The same study can be replicated using a different group of librarians, for example, those who started working when the services were already automated to find out whether they are also challenged as their counterparts. Due to lack of time, the researcher did not investigate the current jobs such as knowledge management, ICT management in libraries, research data management and data curators. Therefore, further research is recommended on the aforementioned topics.

## **6.6 CONCLUSION**

In conclusion, the study has revealed that the role of librarians at the UoN has not necessarily changed in terms of the duties, responsibilities, functions, processes and procedures but what has changed is the intensity and manner of conducting the roles. The librarians at UoN conduct the traditional roles of acquiring, processing, storing and disseminating information for users as well as marketing the services to its users. The emergence of ICTs or the information age has introduced new ways of handling the aforementioned roles, rather than changing the roles.

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**APPENDIX I**  
**THE QUESTIONNAIRE**

**SECTION A: Respondents' profiles**

1. Please indicate the name of the library in which you work.

.....

2. Please indicate your gender (tick in the appropriate brackets)

Male                       Female

3. Please tick against one of the following spaces to show your age bracket

Below 30years     30-40 years     40-50 years     Above 50years

4. Please tick in the space provided below to indicate your job title:

University librarian                       Senior library assistant

Deputy University librarian               Library assistant

Senior librarian                               Library attendant

Librarian                                         Systems librarian

Any other please specify.....

5. What is your highest professional qualification?

Certificate level                               University Degree

Diploma level                                 Master's Degree

PhD

Any other (please specify).....

.....

6. How long have you worked for this library?

Less than 5 years     5-10 years     10-15 years     Above 15years

7. Please select one of the following to indicate the length of your work experience in a library environment.

a. Less than 2 years   

b. 2-5 years             

c. 6-10 years           

d. 11-15 years          

e. Over 15 years

**SECTION B:**

This section is meant to find out the extent to which the functions as well as processes and procedures in libraries have changed in view of the current information age:

8. Which of the following functions were initially available to you when you started work in the library?(Please tick ( √ ) as many options in the appropriate box as may apply to you).

**Information resources**

Manual acquisition of print library books	
Online acquisition of library books	
Acquisition of digital books	
Manual subscription of journals	
Online subscription of journals	
Manual subscription of library newspapers	
Online subscription of newspapers	
Online subscription of periodicals	
Manual subscription of periodicals	
Acquisition of compact disks ( CD)	
Acquisition of CD ROMS	

**Technical services**

Manual cataloguing and classification of library materials	
Online cataloguing and classification of library materials	

Online indexing of library materials	
Manual indexing of library materials	
Online abstracting of information materials	
Manual abstracting of information materials	

**Library services**

Registration and identification of library users	
Lending and returning of information materials	
Interlibrary loan service	
Face to Face reference	
E-mail service	
Online searches	
Manual catalogue	
Online public access catalogue (OPAC)	
Online reference services	
Information literacy	
Internet training to library users	
Searching of electronic databases	
Instant messaging to library users	
LinkedIn service	

User education	
Manual stock taking	
Electronic stock taking	
Manual weeding of information materials	
Electronic weeding of Information materials	
Bibliographic instruction	
Ask the librarian service	
Current Awareness service (CAS)	
Reservation/recall service	
Selective dissemination of information	
Marketing of library resources	

8. Which of the functions below have been discontinued in your library?

**Information resources**

Manual acquisition of print library books	
Online acquisition of library books	
Acquisition of digital books	
Manual subscription of journals	
Online subscription of journals	
Online subscription of library newspapers	

Manual subscription of library newspapers	
Online subscription of periodicals	
Manual subscription of periodicals	
Acquisition of compact disks ( CD)	
Acquisition of CD ROMS	

### **Technical services**

Manual cataloguing and classification of library materials	
Online cataloguing and classification of library materials	
Online indexing of library materials	
Manual indexing of library materials	
Online abstracting of information materials	
Manual abstracting of information materials	

### **Library services**

Registration and identification of library users	
Lending and returning of information materials	

Interlibrary loan service	
Face-to-face reference	
E – mail service	
Online searches	
Manual catalogue	
Online public access catalogue (OPAC)	
Online reference services	
Information literacy	
Internet training to library users	
Searching of electronic databases	
Instant messaging to library users	
LinkedIn service	
User education	
Manual stock taking	
Electronic stocktaking	
Manual weeding of information materials	
Electronic weeding of Information materials	
Bibliographic instruction	
Ask the librarian service	
Current awareness service (CAS)	

Reservation/recall service	
Selective dissemination of information	
Marketing of library resources	

Any other please specify.....  
.....  
.....  
.....

10. Do you agree that the following functions/services of an academic library have changed over time?

*(Select the appropriate rating using the Likert scale below).*

Function/service	Strongly Agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)
Acquisition					
Cataloguing					
Classification					
Indexing					
Abstracting					
Access to catalogue					
Reference services					
Information literacy					
Registration and identification of users					
User education					

Charging and discharging					
Interlibrary loan					
Reservation/recall service					
Stocktaking					
Weeding of materials					
Bibliographic instruction					
Literature searches for clients					
Library orientation					
Current awareness service					
Selective dissemination of Information					
Marketing of library resources					

11. To what extent have the following functions changed in your library in the last ten years?

*(Select the appropriate rating using the Likert scale below).*

Function	Very little Extent (1)	Little Extent (2)	Some extent (3)	Great extent (4)	Very great Extent (5)
----------	---------------------------	----------------------	--------------------	---------------------	--------------------------

Acquisition					
Cataloguing					
Classification					
Indexing					
Abstracting					
Access to catalogue					
Reference services					
Information literacy					
Registration & identification of users					
User education					
Charging & discharging					
Interlibrary loan					
Reservation/recall service					
Stocktaking					
Weeding of materials					
Bibliographic instruction					
Literature searches for clients					
Library orientation					
Current awareness service					
Selective dissemination of Information					
Marketing of library resources					

12. In your opinion, would you say that the volume of your responsibility have increased or decreased over the last ten years in terms of the various functions performed in the library?  
*(Select the appropriate ratings that apply to you using the Likert scale below).*

Function	Greatly increased (6)	Somewhat increased (5)	No change (4)	Somewhat decreased (3)	Greatly decreased (2)	Not Applicable (1)
Acquisition						
Cataloguing						
Classification						
Indexing						
Abstracting						
Access to catalogue						
Reference services						
Information literacy						
Registration & identification of users						
User education						
Charging & discharging						
Interlibrary loan						
Reservation/recall service						
Stocktaking						
Weeding of materials						
Bibliographic instruction						
Literature searches for clients						

Library orientation						
Current awareness service						
Selective dissemination of Information						
Marketing of library resources						
Ask the librarian service						
Instant messaging to users						
Internet training of library users						
Use of e-mails						
Online searches						

13. Please select (√) one option in the appropriate box that best describes how complex your duties and/or responsibilities have become over the last years.

Very complex	
Complex	
Somewhat complex	
Undecided	
Not complex	

14. Do you spend more or less time discharging your duties and/or responsibilities?

More time	
-----------	--

Undecided	
Less time	
Don't know	

15. In your opinion, do librarians need more or less time to execute their duties and/or carry out their responsibilities?

More time	
Undecided	
Less time	
Don't know	

**SECTION C:**

This seeks to examine the competencies and skills required of librarians in the current information age:

16. In your opinion which of the following competencies and skills were the most valuable in the library before the introduction of information technologies in the libraries? *(Please tick (√) as many options in the appropriate box as you may be aware of).*

**Competencies**

Foundations of the profession	
Knowledge of information resources	
Organization of recorded knowledge and information	
Technological knowledge and skills.	

Reference and user services	
Research	
Continuing education and lifelong learning	
Administration and management	

### Skills

Information retrieval skills	
Communication skills	
Listening skills	
Basic computer skills	
Emailing skills	
Marketing skills	
Leadership skills	
Problem solving skills	
Decision making skills	
Budgeting skills	
Management skills	
Internet skills	
Metadata skills	
Library management system skills	

Bibliographic (cataloguing & classification skills)	
Evaluative skills	

Others please specify.....  
.....  
.....

17. In your view, which of the following competencies and skills have become increasingly important especially after the introduction of information communication technologies in libraries? (*Select the appropriate rating using the Likert scale*).

Competencies and skills	Very Important (5)	Important (4)	Slightly Important (3)	Undecided (2)	Not Important (1)	Don't know
Foundations of the profession						
Knowledge of information resources						
Organization of recorded knowledge and information						
Technological knowledge and skills						
Reference and user services						
Research						
Continuing education and lifelong learning						
Administration and management						
Information retrieval skills						
Communication skills						
Listening skills						
Basic computer skills						
Emailing skills						

Marketing skills						
Leadership skills						
Problem solving skills						
Decision making skills						
Budgeting skills						
Management skills						
Internet skills						
Metadata skills						
Library management system skills						
Bibliographic (cataloguing & classification skills)						
Evaluative skills						

18. In your opinion, to what extent have the current competencies and skills improved service provision by libraries? *(Select the appropriate rating using the Likert).*

Competencies and skills	Very great extent (5)	Great extent (4)	Some extent (3)	Little extent (2)	Very little extent (1)	Don't know
Foundations of the profession						
Knowledge of information resources						
Organization of recorded knowledge and information						
Technological knowledge and skills						
Reference and user services						
Research						
Continuing education and lifelong learning						

Administration and management.						
Information retrieval skills						
Communication skills						
Listening skills						
Basic computer skills						
Emailing skills						
Marketing skills						
Leadership skills						
Problem solving skills						
Decision making skills						
Budgeting skills						
Management skills						
Metadata skills						
Internet skills						
Library management system skills						
Bibliographic (cataloguing & classification skills)						
Evaluative skills						

19. When you compare the competencies and skills that existed before the introduction of information technology and those that exist currently, would you say that the type of competencies and skills required: *(Please tick (√) one option in the appropriate box).*

- i. Has changed to a great extent?
- ii. Has changed slightly?
- iii. Has remained the same?

20. Which of the following skills in your opinion are the most needed in libraries for effective service provision? *(Please tick (√) as many options in the appropriate box).*

**Skills**

Information retrieval skills	
Communication skills	
Listening skills	
Basic computer skills	
Emailing skills	
Marketing skills	
Leadership skills	
Problem solving skills	
Decision making skills	
Budgeting skills	
Management skills	
Internet skills	

Metadata skills	
Information literacy skills	
Library management system skills	
Bibliographic (cataloguing and classification skills)	
Evaluative skills	

Others please specify.....  
.....  
.....  
.....  
.....

**SECTION D:**

This section seeks to determine the effects of information and communication technologies (ICTs) on the roles of librarians in the information age.

21. Are you aware of any information technology available in your library?

Yes                       No

22. Please select the options below to indicate the introduction or availability of information and communication technologies in your library over time

ICT	1991-2000	2001-2010	2011-2013
Computers			
Internet			
Compact disks ( CDs)			
CD ROMs			

E - Mail			
Library management software			
Electronic journals			
Electronic books			
Library online databases			
Online user education/tutorials			
Online library cooperation and resource sharing			
Digital repository			
Social media networks			
Online searching			
Library websites			
Electronic libraries			
Electronic/virtual reference services			
Electronic Document delivery			
Online public access catalogue ( OPAC)			

Any other, please list and specify the approximate time that the ICT was introduced or became available in your library.....

.....

.....

.....

23. How would you rate the following ICTs in terms of their importance in enabling efficient service delivery in your library?

ICT	Very Important ( 5)	Important (4)	Slightly Important (3)	Undecided (2)	Not Important (1)	Don't know
Computers						
Internet						
E- Mail						
Library management software						
Electronic journals						
Electronic books						
Library online databases						
Online user education/tutorials						
Online library cooperation and resource sharing						
Digital repository						
Social media networks						
Online searching						
Library websites						
Electronic libraries						
Electronic/virtual reference services						
Electronic document delivery						

Online public access catalogue ( OPAC)						
Compact disks ( CDs)						
Flash disks						
CD ROMS						

24. Please list the information communication technologies (ICTs) in use in the library in which you work

.....

.....

.....

.....

.....

25. In your opinion, to what extent have the ICTs positively impacted on the way you conduct your business in your library?

ICT	Very Little extent ( 1)	Little extent (2)	Some extent (3)	Great extent (4)	Very Great extent (5)	Don't know
Computers						
Internet						
E - Mail						
Library management software						
Electronic journals						
Electronic books						

Library online databases						
Online user education/tutorials						
Online library cooperation and resource sharing						
Digital repository						
Social media networks						
Online searching						
Library websites						
Electronic libraries						
Electronic/virtual reference services						
Electronic document delivery						
Online public access catalogue ( OPAC)						
Compact disks ( CDs)						
Flash disks						
CD ROMS						

26. In your opinion, to what extent have ICTs negatively impacted on the way you conduct your business in your library?

ICT	Very Little extent (1)	Little extent (2)	Some extent (3)	Great extent (4)	Very Great extent (5)	Don't know
Computers						
Internet						
E-mail						
Library management software						
Electronic journals						
Electronic books						
Library online databases						
Online user education/tutorials						
Online library cooperation and resource sharing						
Digital repository						
Social media networks						
Online searching						
Library websites						
Electronic libraries						
Electronic/virtual reference services						
Electronic document delivery						
Online public access catalogue (OPAC)						

Compact disks ( CDs)						
Flash disks						
CD ROMS						

27. In your opinion, have the roles of librarians generally changed as a result of technology in the last 10years? *(please tick(✓) one option in the appropriate box)*

YES	
-----	--

NO	
----	--

28. If you selected an answer NO to question 27, what other factors, in your opinion, have greatly contributed to the changes in libraries?

29. How would you rate your agreement on your feelings about the introduction and usage of ICTs in your library? *(Select the appropriate rating using the Likert scale)*

Attribute	Strongly Agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)	Don't know
Happy						
Challenged						
Motivated						
Threatened						
Unhappy						

Other please specify.....  
 .....  
 .....

**SECTION E:**

This section seeks to establish the challenges facing librarians in their new roles.

30. In your opinion, how would you rate your agreement in terms of the following challenges that librarians face in their current roles? *(Select the appropriate rating using the Likert scale).*

Challenges	Strongly Agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)	Don't know
Use of internet						
Technical services						
Acquisition of resources						
Retraining of staff						
Dynamic users with dynamic needs						
Complex issues that require intensive research						
Teaching information literacy						
User education						
Marketing information Resources						

31. Other than the ones listed in question30, what other challenges has the information age presented to the libraries and librarians?

.....

.....

.....

.....

32. In your opinion, give your recommended solutions to the challenges listed below:

Challenges	Recommended measures
Use of internet	
Technical services	
Acquisition of resources	
Retraining of staff	
Dynamic users with dynamic needs	
Complex issues that require intensive research	
Teaching information literacy	
User education	
Marketing information resources	

Others please specify.....  
 .....  
 .....  
 .....  
 .....

**SECTION F:**

This section seeks to examine other challenges that librarians face in view of time spent, workload and complexities associated with the librarians' work.

33. In your opinion, would you say that librarians have challenges in terms of the following indicators?

a. Time spent in conducting the following?

	Greatly Decreased (1)	Slightly Decreased (2)	Remained The same (3)	Slightly Increased (4)	Greatly Increased (5)
Acquisition of library materials					
Cataloguing & classification					
User instruction					
Reference services					
Circulation- lending & returning of materials					
Indexing					
Abstracting					
Registration of members					
Teaching information literacy					
Stocktaking					
Weeding of materials					
Literature searches for clients					
Marketing of library resources					
Accessing the catalogue					

b. Workload of librarians in the following areas/section?

	Greatly Decreased (1)	Slightly Decreased (2)	Remained the same (3)	Slightly Increased (4)	Greatly Increased (5)
Acquisition of library materials					
Cataloguing & classification					
User instruction					
Reference services					
Circulation- lending & returning of materials					
Indexing					
Abstracting					
Registration of members					
Teaching information literacy					
Stocktaking					
Weeding of materials					
Literature searches for clients					
Marketing of library resources					
Accessing the catalogue					

c. Complexities associated with the librarian's work?

	Greatly Decreased (1)	Slightly Decreased (2)	Remained the same (3)	Slightly Increased (4)	Greatly Increased (5)
Acquisition of library materials					
Cataloguing & classification					
User instruction					
Reference services					
Circulation- lending and returning of materials					
Indexing					
Abstracting					
Registration of members					
Teaching information literacy					
Stock taking					
Weeding of materials					
Literature searches for clients					
Marketing of library resources					
Accessing the catalogue					

**Thank you for taking time to fill this questionnaire.**

## APPENDIX II

### INTERVIEW SCHEDULE FOR LIBRARY DIRECTOR, COLLEGE LIBRARIANS AND THEIR DEPUTIES.

1. What functions were available to you when you started work in the library?
2. What functions have been discontinued in your library? And why?
3. Do you agree that the functions/services of an academic library have changed overtime?
4. If yes, to what extent have those functions changed in your library in the last ten years?
5. In your opinion, would you say that the volume of your responsibility has increased or decreased over the last ten years in terms of various functions performed in the library?
6. How complex have your duties and/or responsibilities become over the last ten years?
7. Do you spend more or less time discharging your duties and/or responsibilities?
8. In your opinion, do librarians need more or less time to execute their duties and/or carryout their responsibilities?
9. In your opinion, what competencies and skills were the most valuable in the library before the introduction of information technologies in the libraries?
10. In your view, what competencies and skill have become increasingly important especially after the introduction of information communication technologies in libraries? And why?
11. In your opinion, to what extent have the current competencies and skills improved service provision by libraries?
12. When you compare the competencies and skills that existed before the introduction of information technology and those that exist currently, what would you comment?
13. In your opinion, which skills are the most needed in libraries for effective service provision?
14. What information communication technologies were available to you between these periods?  
(a) 1991-2000      (b) 2001-2010      (c) 2011-2013
15. How would you rate the ICTS available in your library in terms of their importance in enabling service delivery in your library?

16. In your opinion, to what extent have the ICTs negatively impacted on the way you conduct your business in your library?
17. In your opinion, to what extent have ICTs positively impacted on the way you conduct your business in your library?
18. In your opinion, have the roles of librarians generally changed as a result of technology in the last ten years?
19. How would you rate your agreement on your feelings about the introduction and usage of ICTs in your library?
20. In your opinion, what are the challenges that librarians face in their current roles?
21. In your opinion, what measures would you recommend for these challenges that will help librarians to overcome them?
22. In your opinion, would you say that librarians have challenges in terms of time spent conducting library business, workload of librarians and the complexities associated with the Librarian's work.

**APPENDIX III**

**Letter of Introduction to Institutions**

Mildred Khayoko Otiango

C/o University of South Africa  
P.O. Box 392  
UNISA 0003

**PRETORIA**

The University Librarian

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

Dear Sir/Madam,

**RE: QUESTIONNAIRE ON THE CHANGING ROLES OF ACADEMIC LIBRARIANS  
IN THE INFORMATION AGE**

I am a Masters student of University of South Africa (UNISA), Department of Human Sciences, carrying out a survey on the changing roles of academic librarians in the information age. I would like to request library staff at your library to spare sometime to fill in the attached questionnaire to enable me to share their experiences.

I shall, therefore, be most grateful if you would help me to distribute the questionnaire to all library staff under you who have some training in library science/studies ranging from certificate level to PhD level including those with postgraduate diplomas in library science.

Yours faithfully

M.K.O

Mildred Khayoko Otiango

## APPENDIX IV

### RESEARCH APPROVAL LETTER

