



**UNIVERSITY OF NAIROBI**

**THE EMERGING ROLE OF LIBRARIANS IN A DIGITAL ENVIRONMENT: A  
CASE OF THE UNIVERSITY OF NAIROBI, JOMO KENYATTA MEMORIAL  
LIBRARY**

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REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTERS OF  
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## DECLARATION

This research project is my original work and has not been previously submitted for an academic award in this or any other University.

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## **DEDICATION**

I dedicate this research project to my parents who were a constant source of encouragement and support. To my beloved wife Suzan and our beautiful daughters Zuri and Zahra, who had to bear with me through the long hours of study; your prayers gave me the strength to push forward to the end. God bless you all.

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## ABBREVIATIONS AND ACRONYMS

<b>CAVS</b>	College of Agriculture & Veterinary Sciences
<b>CBPS</b>	College of Biological & Physical Sciences
<b>CEES</b>	College of Education and External Studies
<b>CHS</b>	College of Health Sciences
<b>C-TAM-TPB</b>	Combined Technology Acceptance Model & Theory of Planned Behavior
<b>ICT</b>	Information Communication Technology
<b>IDS</b>	Institute for Development Studies Library
<b>IDT</b>	Innovation Diffusion Theory
<b>IR</b>	Institutional Repository
<b>JKML</b>	Jomo Kenyatta Memorial Library
<b>KEMU</b>	Kenya Methodist University
<b>KENET</b>	Kenya Education Network
<b>KLISC</b>	Kenya Libraries and Information Service Consortium
<b>MM</b>	Motivational Model
<b>PSRI</b>	Population Studies Research Institute Library
<b>SCT</b>	Social Cognitive Theory
<b>SO-UTAUT</b>	Services Oriented Unified Theory of Acceptance and Use of Technology
<b>TAM</b>	Technology Acceptance Model
<b>TPB</b>	Theory of Planned Behavior
<b>TRA</b>	Theory of Reasoned Action
<b>UON</b>	University of Nairobi
<b>UTAUT</b>	Unified Theory of Acceptance and Use of Technology

## ABSTRACT

We live in an environment characterized by constant access to online information and extensive automation of services. It is an information age that has given rise to a knowledge-based society fuelled by advances in technology. The aim of this study was to investigate the emerging role of librarians and information professionals in a digital environment at the Jomo Kenyatta Memorial Library, University of Nairobi. The objectives of this study were to examine the adoption of technology in the provision of library services at the University of Nairobi, Jomo Kenyatta Memorial Library; to examine the changing needs of library users in the digital environment, to explore the emerging role of librarians in a digital environment, and to propose possible steps the library management can take toward the creation of new ICT enabled roles at the Jomo Kenyatta Memorial Library. The theoretical framework guiding this study was the Unified Theory of Acceptance and Use of Technology (UTAUT). The participating respondents comprised of members of staff working at the various library service points and student library users. The study was both qualitative and quantitative, with the data being collected through the circulation of questionnaires among the library staff and students. The study used systematic sampling and non-probability convenience sampling to select the respondents, ensuring comprehensive representation of the target population. The study underscored the necessity for librarians to embrace emerging trends in the profession and the specialized roles that result from interacting with and dispensing services in a digital environment. The study's findings showed that 65% of respondents strongly agreed that knowledgeable and competent staff were an important factor to delivering quality services. Additionally, it also found that 79% strongly supported the idea that librarians in specialized ICT related roles could help to address user needs and expectations. The study will benefit academic libraries, the library professionals that oversee their operations and the patrons who frequent the libraries for information services.

## CHAPTER ONE

### INTRODUCTION AND BACKGROUND INFORMATION

#### 1.0 Introduction

Academic libraries are well-known and valued partners in the educational process and as such they are in a position to influence positive change in the academic environment by supporting information literacy and encouraging a student centered approach to learning. The academic library, alongside its traditional functions of selecting, organizing, storing, and retrieving information, also facilitates access to relevant information by providing direct assistance to users and promotes intellectual freedom amongst users to search for and obtain information from all points of view without any limitations. Emerging trends and innovations in the library profession have further served to improve these services and the facilities made available to users.

Libraries advance the cause of education and academic research by preserving recorded knowledge and making it available to current and future learners (The Role of Libraries in Education, 2016). Information professionals are charged with overseeing the core functions of libraries. However as the influence of technology gradually cements itself, there is a need to re-examine their role.

This study examined the emerging role of Librarians in an environment that is gradually coming under the influence of new technologies. In the background of the study, this chapter addressed the emerging trends in technology and their influence on the long held functions of the library. This chapter will also cover the statement of the research problem; a brief description of the issues that need to be addressed by the researcher. The problem statement will aid the researcher to focus as the study commences, and is central to formulating the objectives of the study. In addition, this chapter will provide the significance of the study as well as the scope, limitations and operational definitions of the various terms used.

## **1.1 Background of the Study**

Advances in Information Communication Technologies (ICTs) have come to influence almost all aspects of everyday life, including the academic and information sectors. Its influence on library and information services is evident from the emergence of electronic services in most academic libraries as well as the introduction of the concept of digital libraries. In comparison to the days when students had to go to the library to look up information in dusty card catalogs and shelves, today, students have ready access to vast amounts of information at anytime from anywhere (Rout and Panigrahi, 2016: 286).

Through modern digital solutions, libraries in academic institutions now have access to essential information resources and can readily avail them to patrons effectively and efficiently via virtual environments (Makori and Mauti, 2016: 1). Traditional libraries are continuously evolving and adapting to the limitless potential of technology, while new libraries are being designed and built ready for the digital environment. Reading materials which have traditionally only been available in hard copy paper format can now be electronically accessed particularly with the increased popularity of portable hand held devices such as tablets and laptop computers, powered by affordable wireless connectivity; with this, we can see that digital academic content is progressively becoming common place (Millar and Schrier, 2015: 167).

Those who are most likely to use these digital platforms to access reading material are the current students within the age group usually referred to as millennials. They comprise of a youthful group of individuals born between 1982 and 2000, during which time the Internet came of age (Best, Buhay and McGuire, 2014: 1). These individuals have had the opportunity to interact with the technology for almost all their lives. They are generally known to “want it all and without delay”, and are constantly connected through technology (Ng, Schweitzer and Lyons, 2010: 282). All that matters to these library users today is that the relevant information is readily available and with minimal barriers, to support research, teaching, and learning. Millennials adapt faster to computer and internet related activities because they were born into this age.

According to Best, Buhay and McGuire (2014: 1, 2), millennial students use technology to complement and enhance lecture content by integrating it into class work and assignments. This way they are able to learn not only through face-to-face contact with their lecturers, but also through access to online sources of information. And since a good portion of their work is completed online, students are not restricted by time, pace or location; especially when it comes to group assignments. They have the option of using online collaboration platforms such as Skype or Google docs to get their work done. In addition to this, assignments can be submitted in soft copy via e-mail to the lecturer as is the case with the teaching programs at the University of Nairobi and numerous other institutions of higher learning. This serves to reduce paper handling, enforces observance of assignment deadlines and facilitates faster and easier plagiarism checking. According to Emanuel (2011: 321), Librarianship as an ever evolving profession has in recent times been characterized by the introduction of new technologies used in creating, organizing, and retrieving information; a complete departure from traditional methods, and one which resonates with an increasingly youthful clientele. In order to remain relevant, information professionals must make an effort to reach out to this new generation of students that is ever more dependent on these technologies, by embracing the changing environment.

Where does the traditional librarian fit into this elaborate scheme of things? Verma (2015: 97) asserts that the primary concern for librarians is that they are able to meet user needs by providing them with up to date, relevant and accurate information. The rapid growth in technology has enabled the development of digitized information systems and the provision of information resources that are well managed and systematically organized so as to ensure ease of access and relevance of materials. This has served to strengthen the library's position (Gaur and Kaushik, 2014: 86). The implication to this developing scenario however, is that in order to regularly meet the needs of tech savvy users, academic libraries and their staff must be equally well equipped and knowledgeable. Librarians need to keep themselves up-to-date with emerging technologies and their possible applications within their profession. Equally important is a commitment to user centered services and effective communication skills as well as management, teaching and leadership qualities.

### **1.1.1 The University of Nairobi**

The foundation of the University of Nairobi can be traced back to 1947 when the then colonial Government in Kenya put forward a proposal for the creation of a commercial and technical institute in Nairobi. By 1949, it had matured to encompass the 3 East African countries namely Kenya, Tanzania and Uganda with the intention of providing specialized education for the member countries. The Royal Technical College of East Africa was issued with a Charter in September of 1951. Around the same time, the Asian Community in the region was also working toward establishing an academy for Commerce, Science and Arts, in commemoration of Mahatma Gandhi. To prevent the replication of efforts, the society spearheading the Gandhi Memorial Academy conceded to work with the colonial Governments of East Africa. As a result in April of 1954, the Gandhi Memorial Academy was integrated into the Royal Technical College of East Africa, and by April of 1956, the college opened its doors to receive the first group of students. (UON Profile: Background, 2017).

On June 25<sup>th</sup>, 1961, the Royal Technical College was elevated to become the second University College in East Africa under the name Royal College Nairobi and became affiliated with the University of London where students in particular faculties, could be awarded degrees from the University of London. This arrangement came to an end in May of 1964 when the Royal College Nairobi was renamed University College Nairobi as a constituent college of the University of East Africa. From then on, enrolled students were able to apply and study for degrees awarded by the University of East Africa and not the University of London. In 1970, the University College Nairobi became the first national university in Kenya and was renamed the University of Nairobi (UON Profile: Background, 2017). As at December 2012, the University of Nairobi boasted the largest number of professors and academic staff in Kenya, and a student population of over 61,000 (University of Nairobi, 2012). The mission of the University of Nairobi is “to provide quality university education and training and to embody the aspirations of the Kenyan people and the global community through creation, preservation, integration, transmission and utilization of knowledge.” (University of Nairobi: Vision and Mission, 2017).



Looking toward the future, “the University of Nairobi has in recent years made great strides in positioning itself as the regional innovation and technology hub. This has seen the institution continually develop indigenous systems through its skilled technical workforce to ease its internal operations and also push the university to the next level in matters technology” (UON - Embracing ICT and Innovativeness, 2016).

### **1.1.2 The University of Nairobi Library and Information Services**

The mission of the library and information services department is to “provide quality information services that empowers the University in carrying out its core activities of teaching, learning, research, community services and consultancy to the highest international standard.” (University of Nairobi Library, 2017).

In keeping with this pledge, the library, through the Kenya Libraries and Information Service Consortium (KLISC), has subscribed to electronic academic information resources which are made available to both students and academic staff. The KLISC secretariat has been based at the University of Nairobi library since its inception in 2003. In addition, the Jomo Kenyatta Memorial Library at the University of Nairobi main campus also hosts the Kenya Education Network (KENET), a non-profit organization which provides cost-effective, high bandwidth internet services to higher education and research institutions in Kenya (Kenya Education Network, 2017).

The library system was established to support University academic programs. The Jomo Kenyatta Memorial Library (JKML) is the flagship library located at the University of Nairobi main campus. The library system has expanded over the years to include branch libraries in all the University campuses and colleges. These branch libraries include CEES Library (Kikuyu), Mwai Kibaki Library (School of Business), School of Law Library, Institute for Development Studies Library (IDS), Medical Library (CBPS), Population Studies Research Institute Library (PSRI), Upper Kabete Library (CAVS), Chiromo Library (CBPS), and ADD Library (College of Architecture and Engineering). (University of Nairobi Library | Introduction, 2017)

### **1.1.3 The current situation at the Jomo Kenyatta Memorial Library**

In 2014, the library department upgraded its information management system to the current version of V-Smart software and took steps to improve its website to be more interactive. It spearheaded the use of Turnitin; a web-based plagiarism detection software, to enhance originality in academic research, and also collaborated with the ICT department to develop and implement an online helpdesk system through which students and other stakeholders could post queries to specific sections of the library and receive timely responses.

At the time of conducting this study, the library department had created only two new roles emanating from investments in subscription databases for academic material, and the institutional repository. These positions are Systems librarian and institutional repository librarian (University of Nairobi Library, 2018). In addition, the department also created a single position for ICT technologist whose main role includes maintaining the library website, implementing and maintaining the institutional repository platform, dispensing technical assistance around the library, as well as providing technical advice to the library management on relevant issues.

These three positions cut across the thirteen College and branch libraries spread out in the various campuses of the University, creating a situation where they are spread thin. The institutional repository librarian for example is charged with ensuring that all notable academic works produced by University staff and students are digitized and uploaded to the repository. The challenge here is that these works could be spread out across the several schools and campuses, making this a daunting task even with hired help.

Similarly the ICT technologist has to respond to technical related issues in distant campus libraries such as CEES in Kikuyu or CAVS in Upper Kabete, and still be required to execute other pressing responsibilities at JKML. Important to note is that some of these technical issues do not necessarily require expert assistance. All that is required is a small amount of trouble shooting to resolve the issue. There is an apparent shortage of staff who are able to perform even basic technical trouble shooting tasks and this has the potential of affecting the quality of services offered at the library.

## **1.2 Statement of the Research Problem**

The management of information has long been considered to be the preserve of librarians and libraries (Erich, 2013: 76). Librarians are trained to be proficient in information searching, selecting, acquiring, organizing, preserving and disseminating, albeit in a traditional sense. However, according to Kumar (2010:24), a Library's standing is no longer defined by the compilation of print material it holds; today, it extends to include digital and online content as well as the seamless access to these information resources.

In recent years, Library services at the University of Nairobi have gradually transitioned to embrace the digital environment by automating routine operations such as circulation, cataloguing, and acquisitions services. Card catalogs have been replaced by online public access catalogs, circulation services employ barcodes that are embedded to library books and student's IDs. These barcodes carry essential information on the books or student IDs to which they are fixed. Using computers and barcode readers, circulation librarians are able to reconcile the two when loaning or accepting returns. Similarly, book acquisition is now an online process where librarians can login to a publisher's website, select the relevant texts, place the order and make the payment.

These developments however, are focused only on the core operational functions of the library, which are learnt through routine and repetitive interaction with the systems. They do not address the diverse emerging trends in information creation, access, storage and sharing. These trends which include social media platforms, cloud computing and online collaborative applications have become common place amongst the youthful and tech savvy library users who frequent the Jomo Kenyatta Memorial Library. This study assessed the challenges faced by librarians in a digital environment and the need to assume new roles in order to meet the needs and expectations of modern library users.

### **1.3 Aim of the Study**

The aim of this study was to investigate the emerging role of librarians and information professionals in a digital environment at the Jomo Kenyatta Memorial Library, University of Nairobi.

### **1.4 Objectives of the Study**

The specific objectives of this study were to:

- i. Examine the adoption of ICTs in the provision of library services at the Jomo Kenyatta Memorial Library.
- ii. To examine the changing needs of library users in the digital environment at the Jomo Kenyatta Memorial Library.
- iii. To explore the emerging role of librarians in a digital environment at the Jomo Kenyatta Memorial Library.
- iv. To propose possible steps the library management can take toward the creation of new ICT enabled roles at the Jomo Kenyatta Memorial Library.

### **1.5 Research Questions**

- i. How has the Jomo Kenyatta Memorial Library integrated new technologies in the provision of library services?
- ii. How have user needs evolved in response to the emerging digital environment at the Jomo Kenyatta Memorial Library?
- iii. What are the emerging roles of librarians in the digital environment at the Jomo Kenyatta Memorial Library?
- iv. What steps can the Library management take toward the creation of new ICT enabled roles at the Jomo Kenyatta Memorial Library.

These research questions above were tailored to reflect the situation on the ground and helped to guide the study and formulate the questionnaire.

## **1.6 Significance of the Study**

The world today is characterized by ready and affordable access to information from anywhere and at any time. As such, we are compelled to examine how emerging technologies are influencing the library profession. The findings of this study will be crucial to informing the management of libraries on the relevant skills that should be imparted on librarians with respect to the mentioned emerging trends. The findings could also inform the adjustment of library capacity building programs to include computer and internet related training.

The findings assisted in developing the criteria for library personnel recruitment as well as helping to paint a reasonable picture of the future of the library profession in terms of specialized roles. In addition research into the integration of emerging trends into information dissemination facilitated effective policy making in the higher education sector. Lastly, the findings of this study added to the body of knowledge related to library and information studies.

## **1.7 Scope of the Study**

This study focused mainly on the University of Nairobi's Jomo Kenyatta Memorial Library, the user experience and the quality of services and facilities offered there, and the role of the librarian with regard to the prevailing digital environment. The participants of this study were therefore drawn from library staff members, and the students who make up the main users of library resources and facilities and who are the main recipients of automated services.

## **1.8 Limitations of the Study**

The study was conducted as the 2017 election season was picking up speed; and which ultimately culminated in a charged and emotional political atmosphere. The main campus which is located right across the road from the IEBC experienced constant disturbance from the rioting public, making it difficult for the study to progress.

In addition, the University was affected by two separate instances of industrial action by University teaching and non-teaching staff. As a result, services at JKML were interrupted constantly, impeding the study.

A lot of time was lost during these events, limiting the study. The researcher compensated for time lost by capitalizing heavily on the different occasions when students were in session. Being self-sponsored, the researcher was also limited by financial constraints.

## **1.9 Definition of Concepts**

### **Digital Environment**

A digital environment is a situation where the use of computers, computer networks, the Internet and digital communication for work, research and recreation is prevalent. In recent years, the University of Nairobi has rapidly moved to become a regional digital hub.

### **Digital Library**

The IFLA/UNESCO Manifesto for Digital Libraries (2014) describes it as “an online collection of digital objects, of guaranteed quality, that are created and managed in accordance to widely accepted principles and made available in a consistent and sustainable manner.”

### **Information Professional**

An Information professional is an individual who is educated, trained, and has the experience to strategically identify, seek out and locate answers that address common information problems. The Information Professional strategically develops, deploys, and manages available information resources and services so as to advance the mission of the library or information center (Shumaker et al, 2016).

## **Information Society**

Information society on the other hand refers to a society where the creation, dissemination, use, incorporation, and management of information has become an important cultural, economic, and political activity (Shahnaz, Veisi, and Zadeh, 2013: 362). Here, daily life is characterized by a high flow of information in almost all aspects.

## **Millennial**

The Oxford English dictionary (2017) defines a millennial to be a member of the generation born between the early 1980s to late 1990s. Such a person would be reaching young adulthood in the early 21st century. Most importantly, these are people who were born at the advent of computers and internet technologies, and as such, their lives and personalities have largely been influenced by this.

## **Modern Librarian**

The term modern librarian refers to a librarian who is consciously aware of the emerging trends in the profession and takes steps to keep themselves up-to-date with the changes in order to remain relevant and be able to address the needs of modern library users.

## **Modern Library User**

This term could also apply to a millennial. However by my understanding it implies specifically to any person who is aware of and subscribes to emerging trends in technology related to information access and use.

## **Traditional Librarian**

These are Librarians whose training focused mainly on proficiency in classifying and cataloguing, information searching, selecting, acquiring, preserving and disseminating. Skills related to modern technology use are little or not present at all.

## **1.10 Chapter Summary**

This chapter covered the background of the study and introduced the research problem, and the researcher's motivations for undertaking the study. With respect to the stated problem, the researcher successfully formulated the objectives and research questions which will serve to guide the study. Finally the chapter addressed the scope and limitation of the study as well as the definition of relevant terms and concepts.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

A literature review serves to thrash out previously published findings on a particular area of study. According to Kothari (2004: 28), literature review works to establish what data and other materials are available for operational purposes. This serves to narrow the problem itself as well as the possible technique that might be used. This chapter will seek to review literature related to library services in the digital age. The literature review focused on the role of technology and how it has influenced user needs and the provision of quality library services. It also addressed the role of the librarian with regard to meeting new challenges brought on by technology.

#### **2.1 The Adoption of Technology in the Provision of Library Services**

We live in a digital age, where the ability to quickly locate, access and utilize information resources when needed has become central to everyday life. As such, it is the responsibility of the Librarian to impart relevant skills on library users so that they may be able to recognize when information is needed and have the competence to locate the information, access and use it effectively. However, in order to do this, the Librarian must be sufficiently equipped and well versed on the emerging technological trends in the profession so as to successfully engage modern library users.

Ogunsola (2011) asserts that progress and development is heavily dependent on how effectively we can participate in the emerging information society; an activity which is similarly dependant on access to affordable internet. Significant investments in relevant infrastructure in Kenya has seen the cost of internet access come down, and with continued focus on investments in ICTs and related technologies, it will certainly reduce even more. In such an environment where information resources are readily available electronically, some may be inclined to believe that the librarian's role in information services is gradually diminishing.

Especially when you consider that most library users comprise of the youth who are known to be technologically savvy and very forthright. In actual fact, the librarian still plays a critical role even with the advent of these new developments.

Knowledge acquired overtime through the continued execution of traditional library services, puts the librarian or information professional in a position of authority particularly in the implementation of new technology driven concepts such as automating library systems and integrating traditional library operations and services with these technologies. Therefore as our world gradually becomes an information society through the increased creation, dissemination, integration and use of information, the library must also evolve and position itself to deliver quality, needs-based, and value-added services in line with the needs and expectations of today's library users (Kamila, 2013: 329).

According to Porter & Millar (2001), Information technology plays a key role in the process of implementing strategy. ICT enabled reporting systems easily track progress toward specific goals as well as success factors. By using information systems, organizations can gauge their activities more accurately and help motivate their staff and managers to implement strategies successfully. They further state that organizations that anticipate the power of ICTs will be able to control events and set new trends. In addition, organizations that fail to acknowledge the impact of ICTs will in time be compelled to accept the changes that others initiate and will find themselves at a competitive disadvantage.

## **2.2 The Evolving Needs of Library Users**

As academic libraries work toward maintaining their relevance in this fast changing environment, it is important for them to know and understand their users. We live in a networked world where libraries are increasingly finding themselves having to cater for a more diverse, mobile, and connected population. Today, a considerable percentage of the students who use academic libraries fall into the age group popularly referred to as "millennials." These are people born between the year 1982 and 2000, and are also referred to as being digital natives because of their high level of digital literacy (Best, Buhay and McGuire, 2014: 1).

According to Phillips and Trainor (2014: 520), millennial students stand apart from previous generations based on a number of factors. Having grown up with a wide variety of choices at their disposal, they naturally expect more selectivity and options. They regard this as natural right and tend to take offence at limited choices. Millennials also tend to have little patience for delays and expect quick services and feedback to queries made. This need for speed and efficiency prevails above all other service expectations. In addition, today's students are more receptive to computers and internet related services because they have always had them. They still expect and welcome the seasoned guidance of their lecturers, but they crave the speed, convenience, flexibility and power provided by digital services and resources.

They also prefer to learn by doing and interacting, which enables them to get immediate feedback about what works and what does not. Millennials are constantly connected and are highly influenced by their social networks. They communicate frequently through instant messaging, email and cell phones. They thrive in environments of unrestrained communication and mobility which enables them to remain connected from anywhere and at anytime. All these unique qualities challenge academic libraries to be in-tune and responsive to the diverse needs and expectations of its users; this is essential to ensuring the library's continued relevance. In addition the librarians charged with dealing directly with student must be able to engage them at their own level. Libraries that lack the flexibility to adapt to user expectations will experience a decline in patron usage; if users feel that the library has nothing to offer them, they will simply stop using it.

### **2.3 The Emerging Role of Librarians in a Digital Environment**

As our society gradually evolves to become more information driven, users expect libraries to deliver quality, relevant, complete and user friendly services. The library will need to similarly evolve and re-package its facilities and services in order to deliver quality, user-focused, and value added services (Kamila, 2013: 329). This calls for the librarian to have a good understanding and appreciation of the users changing needs and expectations.

Kamila, (2013: 329) further points out that user's are only concerned about their ability to quickly and flexibly access relevant information that can support their research, teaching, and learning needs. Such efficient and effective services are facilitated by librarians behind the scenes, where they have to deal with selection processes, content acquisition, licensing as well as hardware and software requirements. In addition to having a good understanding and appreciation of user needs and expectations, librarians should also be able to confidently display an ability to manipulate technology and harness it for productive service delivery. In this spirit, Emanuel, (2013: 20) introduces the concept of millennial librarians as a new generation of academic librarians, born between 1982 and 2001, into the Millennial Generation.

This period saw the rise in usage of computers and internet technologies and as such, these developments became a part of their daily lives including their education. Millennial librarians tend to have varied backgrounds and are more receptive to technology, in contrast to traditional librarians Emanuel, (2011: 321). Their interaction with technology from an early age has enabled them to effortlessly integrate technology into their professional and personal lives. Modern library users expect automated libraries, computerized services, electronic resources, digital libraries and libraries without walls enabled by remote access technologies. They are more inclined toward information content that is quick to access and easy to consume.

This means that the content must be packaged and presented in an attractive and easily digestible format, which can only be electronic. Millennial librarians are able to easily engage users and effectively address these needs. Their affinity for technology has led many to believe that the millennial generation is well positioned to transform library services with their unique skills (Emanuel, 2013: 20). The concept of libraries in a digital environment simply refers to the once traditional services which have now acquired a technological aspect that will enable users to draw from the benefits that come with this technology, previously not available (Ogunsola, 2011). In this environment, Kamila (2013: 328) posits that the librarian must play the central role of a facilitator, ICT specialist, knowledge manager, educator, resource preserver, information specialist and research intermediary.

The implication here is that in this day and age, librarians must possess requisite skills and training in new technologies and emerging trends in the library profession. Massis (2014: 496) reiterates that librarians must be well-informed and fully familiarized with the preferred platforms used by modern library patrons in accessing digitized information materials.

In addition, Janakiraman, Ormsby & Subramanian (2016: 251) state that in the modern world, a background in ICT is necessary before taking up a librarianship job position, as one may be required to assume roles related to library networking, e-library development, database development and maintenance, and other related tasks. Consequently, new designations for information professionals with ICT qualifications include Systems Librarian, Electronic Resource Librarian, Library web application specialist, Head of research repository and Digital archives manager.

ICT enabled operations and services are increasingly becoming common place in academic libraries and as such these positions are oriented toward ICT trained Library science professionals.

#### **2.4 Library 2.0 and the Role of ICT in Librarianship**

Library 2.0 can be described simply as a user-centered form of library service offering that encourages user participation in the creation of content (Casey and Savastinuk, 2010). At the core of Library 2.0, are information communication technologies (ICTs). ICT is the backbone of the information age. Coupled with the fact that the library is the bastion of information and knowledge, this has made information services virtual, allowing them to extend their reach beyond walls and physical buildings (Verma, 2015: 97). Web 2.0 technologies have played an important role in enabling libraries to keep up with the changing needs of library users. Web 2.0 implies the use of online tools and applications to enable individuals to collaborate, contribute, share and interact with information using the internet as a platform (Godwin and Parker, 2008: 7). This has enabled web content to become more dynamic, and has brought about the growth of social media platforms.

The past several years have seen technological advances that have enabled libraries to create and make available several new services, such as remote access which uses virtual private networks (VPN) to extend a private network across a public network, allowing users to remotely access library electronic resources.

These advances have also made possible other library services such as virtual referencing, online public access catalogs that can be accessed from anywhere, downloadable content and video tutorials that library users can use at their convenience in the comfort of their homes. The ability to offer these improved, user-centered and technology driven library services is what encompasses Library 2.0.

The emerging digital environment has influenced the needs of library users to evolve overtime, making it difficult to effectively reach these users through physical services. Library 2.0 provides a virtual environment where users can access information and services that are relevant to their needs. It also facilitates collaboration and enables users to contribute by creating their own content or giving observations on existing works.

The Library 2.0 technologies continues to evolve, giving rise to new concepts such as the electronic discovery service which has gradually been gaining popularity among many academic libraries in Kenya. These discovery tools are changing the way users search academic resources by bringing together the most comprehensive collection of academic content, creating a unified catalog of the library's electronic resources accessible online via a single search experience.

Current search methods are slow and time consuming, requiring users to search individual resources independently to find relevant information on a particular topic. This single search approach has transformed the library experience for many users. A discovery service is a comprehensive directory covering several library electronic resources. It displays full text content of materials to which the library is subscribed or has access including electronic journals and books, repositories, and online public access catalogue (Gray and Hirshon, 2017). By embracing these innovative services driven by technology, academic libraries have been able to reach users even beyond the library walls.

## **2.5 Challenges Facing Librarians Today**

Traditional libraries are largely print-based and the focus of librarians here is mainly on cataloguing and classifying resources. However, print based content is gradually giving way to electronic information resources and this new development presents several challenges for both librarians and libraries (Kamila, 2013: 329).

Firstly, the ever increasing amount of published information that is available online presents a major challenge on how to locate, access and manage it all. This creates a phenomenon commonly referred to as information explosion which consequently leads to information overload. In addition, the introduction of ICT driven systems has proved to be a major challenge for traditional librarians who may not have the requisite training on how to interact and operate them effectively. Similarly, advances in internet technologies have resulted in the growth and usage of web resources, which have been integrated into library information services. While automated services offer speed and efficiency, they are expensive to implement.

User's expectations is another challenge, where a greater percentage of academic library users belong to the youth category who are well known for their capacity to quickly grasp and embrace new trends in technology. As such, many traditional librarians find themselves playing catch-up when trying to serve this group. Lastly, the concept of digital libraries implies the use of digitized information resources. Traditional circulation material is gradually being eclipsed by electronic formats which are more preferred because they offer flexibility and ease of access. These challenges call for the re-organization and transformation of the information environment and library operations, as well as the roles and training of librarians and information professionals (Kamila, 2013: 329).

## **2.6 Theoretical Framework**

According to Grant & Osanloo (2014: 12) “the theoretical framework is the foundation from which all knowledge is constructed for a research study”. They further state that the theoretical framework is central to the rationale of the study, the problem statement, the significance, and the research questions. This study was based on a theoretical foundation that strengthens the motivation for the study, specifically the Unified Theory of Acceptance and Use of Technology.

### **2.6.1 The Unified Theory of Acceptance and Use of Technology (UTAUT)**

The Unified Theory of Acceptance and Use of Technology (UTAUT) presents a practical tool for assessing the probability of success in the introduction of new technologies and helps in understanding the factors surrounding acceptance or resistance so as to design effective interventions targeted at the stakeholders (Venkatesh et al, 2003: 426).

Its development was driven by a motivation to unify research efforts related to Technology Acceptance. UTAUT is based on eight competing technology acceptance models which center on an individual’s perception about technology and its uses; and this forms their stance toward technology which further determines their decision to either adopt it or reject it (Ahmad, 2014: 21).

The models that form the foundation of UTAUT include the Theory of Planned Behavior (TPB), Theory of Reasoned Action (TRA), the Motivational Model (MM), the Technology Acceptance Model (TAM), the model of PC utilization, the Innovation Diffusion Theory (IDT), and the Social Cognitive Theory (SCT) and C-TAM-TPB which is a combination of the Technology Acceptance Model and the Theory of Planned Behavior.

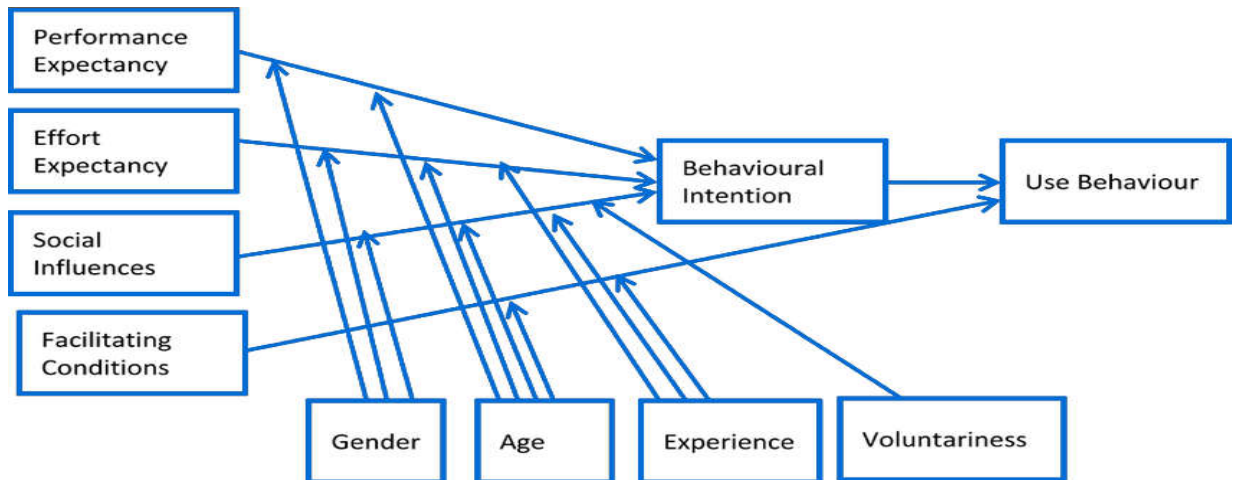
### **2.6.2 Suitability of UTAUT**

Venkatesh et al. (2003) posit that user acceptance and usage behaviour with regard to UTAUT, is based on four key determinants, namely performance expectancy, effort expectancy, social influence, and facilitating conditions.



Performance expectancy points to the extent to which a person believes that using the technology will improve his or her job performance. Effort expectancy refers to the level of ease resulting from the use of the technology. Social influence implies the extent to which a person recognizes that important stakeholders believe he or she should use the new technology. Facilitating conditions simply refer to the extent to which a person believes that organizational and technical infrastructure is available to sustain the use of the technology (Venkatesh et al., 2003). Since its development, UTAUT has been broadly employed especially in the field of information systems (IS) and in shedding light on matters of technology adoption. UTAUT is appropriate for the library context and is suitable in guiding the understanding of contributing factors with respect to acceptance and usage of emerging technologies in the field (Dulle and Minishi-Majanja, 2011: 41).

The researcher found this model useful for exploring the emerging role of librarians in a digital environment because the roles in question are based on the implementation and use of relevant technologies. Any library role that is borne of the digital environment is intended to try and meet the evolving needs and expectations of the library users - a great number of whom in this case are youthful students whose age group make them very receptive to technology and innovations particularly in the area of accessing information (Phillips and Trainor, 2014: 520). In this information age, the level of implementation and use of ICTs in academic libraries determines how well user needs and expectations can be satisfied. In the hands of competent library staff, library services and facilities can achieve the highest levels of quality. By assessing the acceptance and use of technology at JKML this model will help to highlight the emerging roles of librarians in a digital environment.



**Figure 2.1: Unified Theory of Acceptance and Use of Technology (Venkatesh et al, 2003)**

### 2.6.3 Application of UTAUT

Tibenderana, et al (2010) employed UTAUT in assessing the levels of end-user acceptance and use of hybrid library services in academic libraries in Uganda. The resulting observations were that that relevance and collective influence had a major bearing on intentions to use digital library services. Similarly, Ayele and Sreenivasarao, (2013) used a modified version of UTAUT known as Services Oriented Unified Theory of Acceptance and Use of Technology (SO-UTAUT) to study the acceptance and use of electronic library services in Universities. This further served to affirm the efficiency and robustness of UTAUT. This theory derives relevance from its high level of comprehensiveness and strong explanatory power as compared to other theories, making it a preferred choice for this study. As earlier stated, UTAUT posits that the willingness to use a technology is subjective to an individual’s perceptions of performance, how the technology will ease the work process, prevailing social influences at the work place and the availability of support from the organizational management. UTAUT is therefore able to accurately address user attitudes towards embracing ICT related solutions.

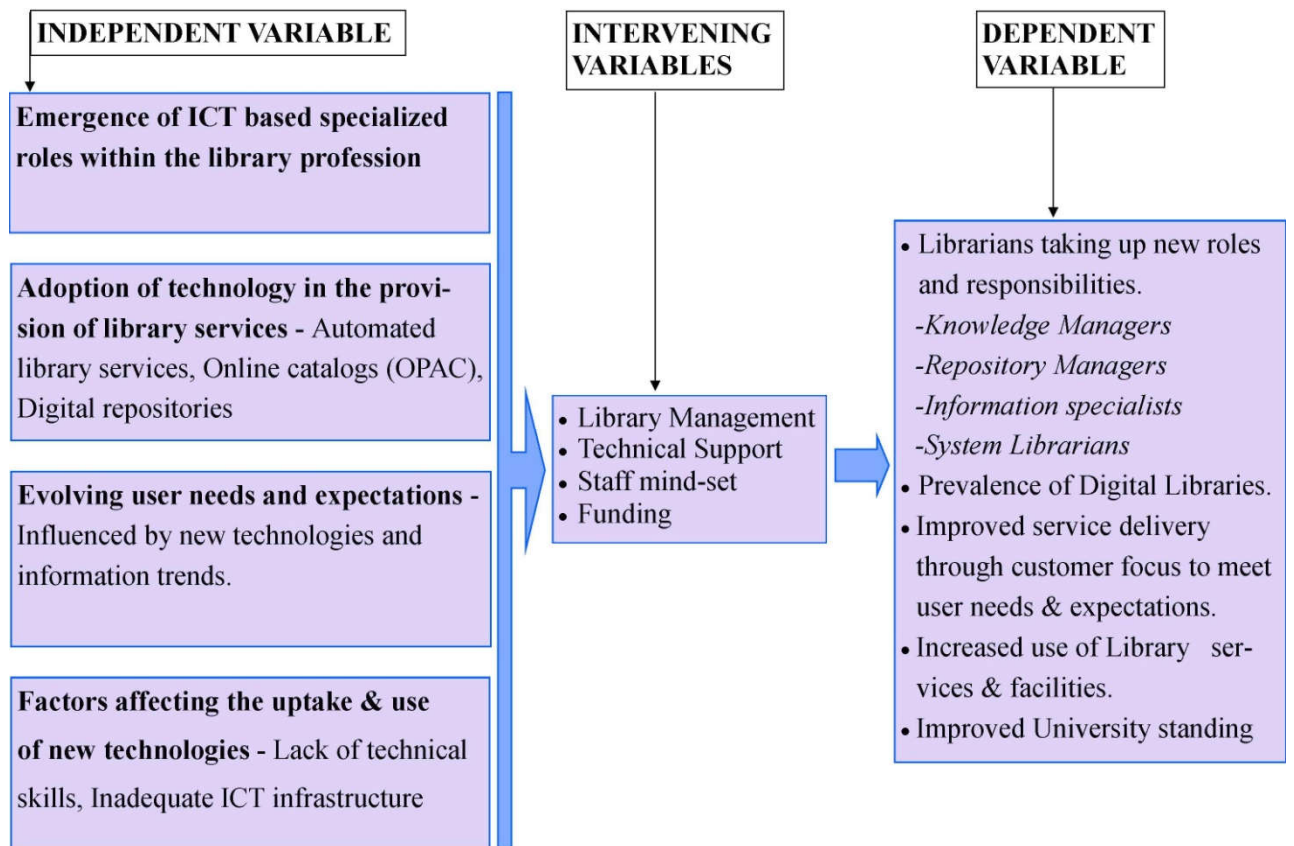
## 2.7 Conceptual Framework

A conceptual framework simply refers to a schematic diagram which highlights the key variables in a particular study. Miles and Huberman (1994: 18) describe it as brief narrative accompanied by a graphic depiction of the main things to be studied, including the key concepts, factors and variables, as well as how they relate to one another.

As such, one was developed to help identify key variables in this study that are vital to the research investigation. The framework aided in illustrating how the key variables in this study connect with each other as well as the strength of their connection. It comprises independent variables including – relevant training in ICTs, integration of ICTs in library operations, emerging technology trends in the library profession and evolving user needs and expectations. The dependent variable is the ability of librarians to take up the emerging roles brought about by advances in technology. The conceptual framework gives a clear sense about what the underlying connections between the variables are and how they work together as a whole. This study aims to show that a constructive relationship between independent and dependent variables is crucial to realizing a progressive outcome which is to ensure improved service delivery in academic libraries through a customer focus that aims to meet user needs and expectations by embracing the emerging technological trends in the library profession.

The conceptual framework for this study features independent variables which include the adoption of technology in the provision of library services; the evolving user needs and expectations; factors affecting the uptake and use of new technologies; and the recognition of ICT related specialized library profession roles. The dependent variables include - the acceptance of new roles and responsibilities within the library profession; and the prevalence of Library 2.0 and beyond. The intervening variables include - Library management; technical support; the prevailing staff mind-set; and funding for capacity building projects.

Expected outcomes include - Improved service delivery through customer focus to meet user needs and expectations; increased use of Library services and facilities; improved University standing. An alternative outcome could be reduced user confidence and use of library facilities, as well as unmet user needs and expectations. Figure 2.2 below is a diagrammatic representation of the main areas of interest and study.



**Figure 2.2: Conceptual Framework**

## 2.8 Chapter Summary

Giving reference to the literature review, it is evident that librarians and information professionals still have an important role to play even in the emerging technology driven information society. It is also clear that for the library profession to remain relevant, librarians must put in deliberate efforts to familiarize themselves with the new technologies that are driving the information age as well as the resulting changes in user needs and expectations.

In addition, there are also major benefits to be realized by this shift – including the ability to reach users virtually, improved services and facilities resulting in increased access and use, increased knowledge creation resulting from user contribution, open access to relevant research material, improved quality of academic output resulting from anti-plagiarism efforts and increased online visibility of academic output from around the world. This conclusion presents a fitting opening to the next chapter which covers the research methodology for this study.

## CHAPTER THREE

### RESEARCH METHODOLOGY

#### 3.0 Introduction

This chapter of the study covered the methodology that was employed to collect data. It addressed the research design, study population, description of the research instruments and their validity and reliability, definition of variables, data collection and analysis techniques as well as ethical considerations. The data collection here was geared toward assessing the impact of technology on library operations and services, as well as the extent of ICT competency among library staff.

#### 3.1 Research Design

According to Rajasekar et al (2006: 2), research is “a scientific, systematic and organized method of finding relevant answers to a specific question or topic”. It is systematic because the process is broken down into clear steps that lead to a logical conclusion. In addition, it is organized because there is a deliberate method used to reach the conclusion and offer possible solutions to the problem. Kothari (2004: 32) describes research design as “the conceptual structure within which research is undertaken.” He further states that it comprises the outline for the collection, measurement and analysis of data. The research design therefore covers everything from writing the hypothesis and its operational implications to the final data analysis. Given the above description of relevant terms, we can refer to research methodology as simply as the formalized guidelines on how to conduct research.

The purpose of this study was to examine the emerging role of librarians in a digital environment, specifically at the Jomo Kenyatta Memorial Library. To this end, the study used a research design that was both quantitative and qualitative. The qualitative aspect served to uncover trends in thoughts and opinions of the respondents, enabling the study to dive deeper into the problem, while the quantitative aspect provided a follow up to the findings from the qualitative data.

Areas of the study such as integration of ICTs into library operations, and user experience required the respondents to react to questions with specific listed answer choices. Other aspects such as the emerging role of librarians in the prevailing digital environment, meeting user needs, and the possible challenges encountered in this process required respondents to put forward their personal views.

This research design was found preferable to determining the linkages between prevailing trends, user expectations and the emerging roles of librarians in a digital environment. It sought to highlight existing phenomena by obtain information on the perceptions, attitudes, and values of individuals through questionnaires.

### **3.2 Location of the Study**

This study was undertaken at the University of Nairobi's Jomo Kenyatta Memorial Library (JKML) in Nairobi, Kenya. The University of Nairobi has made significant strides in recent years toward positioning itself as a leader in innovation and technology uptake. The Library and Information Services department is a key component of the University. It has contributed significantly to realizing the University's vision by embracing ICT and automating library services as well as developing key projects such as the University of Nairobi Digital Repository, which is among the leading institutional repositories in Africa. (Ranking Web of Repositories – Africa, 2017)

### **3.3 Target Population**

This refers to the respondents participating in the study who have similar characteristics or share similar attributes. The population comprised 64 library staff at the Jomo Kenyatta Memorial Library, as well as an average of 1675 student users who visit the library on a daily basis. A sampling frame was used to define the target population. The purpose of the sampling frame is to help the researcher by defining a set of elements from which a sample of the target population can be selected. (Lewis-Beck, Bryman and Futing Liao, 2004).

### 3.4 Sampling

Sampling is a process that involves selecting a number of individuals (sub-group) which will adequately represent the population from which it was derived. Oso and Onen (2009) describe a sample as a subset of the target population which can be used as its true representative. Sampling helps to reduce the cost of collecting data by making the process more efficient and improving the accuracy and quality of the data collected. Given that the study is being conducted within a localized area, the selected sample was able to provide the necessary information as it pertains to the study problem. Kothari (2004: 56) defines a sample size as “the number of items to be selected from the universe to constitute a sample” In simple terms, sample size refers to the number of subjects included in a sample which is basically a group of subjects that is selected from the general population and is considered a representative of the true population for that specific study.

As such, the samples selected in this study represented the entire population. The target population constituted the 64 library staff members who work at the Jomo Kenyatta Memorial Library (University of Nairobi Library, 2017) and 1,675 students who made up the daily user average visiting the Jomo Kenyatta Memorial Library (JKML Daily Usage Statistics, 2016-2017). The sample size for both library staff and users was arrived at using Taro Yamane’s formula with a 90% confidence level. Yamane, a mathematical statistician developed this method to aid in determining sample size in relation to the population under study. It enables the conclusions reached after the study to be generalized to the entire population from which the sample was derived (Yamane, 1967).

$$n = \frac{N}{1 + N * (e)^2}$$

n = sample size

N = population size

e = acceptable margin of error

1 = constant value



**Table 3.1 – Population Sampling Frame**

<b>Category</b>	<b>Population (N)</b>	<b>Error (e)</b>	<b>Margin</b>	<b>Sample (n)</b>
Library Staff	64	0.1		39
Users	1675	0.1		94
<b>Sample Size</b>	<b>1739</b>			<b>137</b>

### **3.4.1 Sampling Techniques**

This refers to the specific processes by which entities of the sample are selected. Kothari, (2004: 58) asserts that in selecting a sampling procedure, a researcher must make sure that the process results in a reasonably small sampling error so as to control the bias. In light of this, the study favoured using systematic sampling for library staff members and non-probability convenience sampling for the student who regularly make use of the services and resources offered at the Jomo Kenyatta Memorial Library.

According to Siegle (2018), systematic sampling is a random sampling technique where elements are picked from the target population by selecting a random starting point and then selecting other members after a fixed interval. The interval is calculated by dividing the population size by the desired sample size. This sampling method ensures that each element in the population has a defined and equal probability of selection. This method was favoured because it is simple and the results obtained here are representative of the population unless certain traits in the population recur, which is highly unlikely.

Taking into consideration the location of the study, non-probability convenience sampling was favoured because it allowed respondents to be selected based on availability and willingness to participate in the study. A potential drawback of this technique, however, is that results are prone to volunteer bias; because those who volunteer to participate may be different from those who opt out, resulting in a sample that may not be representative. The researcher tackled this by traversing the various sections of the library, including the Graduate Research Library, the MBA section, Africana section and the general reading area within the Jomo Kenyatta Memorial Library. This ensured a representative sample.

### **3.5 Data Collection Instruments**

This refers to the process by which the researcher collects the information needed to address the research problem. Kothari, (2004: 95), identifies two types of research data - primary and secondary data. Primary data is that which is collected afresh and for the first time, while secondary data refers to that which has already been collected by someone else and passed through the statistical process.

#### **3.5.1 Questionnaires**

Lavrakas (2008) defines a questionnaire as one of the key instruments for collecting data in research. It comprises a set of standardized questions which follow a logical format in order to collect individual data about one or more specific subjects.

This study used questionnaires to collect primary data through a series of closed and open ended questions designed to elicit information that addresses specific objectives of the study. Closed questions gave the respondents a set of choices or options while open ended questions allow greater freedom of responses. The questionnaires were administered to the library staff and students who frequent the Jomo Kenyatta Memorial Library.

#### **3.5.2 Pilot Study**

Pilot testing was used to determine the effectiveness of the instrument. Pre-testing of the questionnaire was carried out at Kenya Methodist University (KeMU) Nairobi campus library. It helped to identify potential flaws or gaps that could have led to inaccurate results. Findings from the pilot test compelled the research to restructure some of the questions so that they could better reflect the objectives of the study and also eliminate problems during data analysis.

#### **3.5.3 Validity of the Instruments**

According to Leung (2015: 325), validity in qualitative research refers to the appropriateness of the processes, tools used, and data collected, toward ensuring the accuracy or correctness of the research findings.

Internal validity touches on credibility and refers to the trustworthiness of the findings. This depends primarily on the richness of the data collected than on the quantity. External validity touches on transferability and refers to the degree to which the research findings can be applied to other contexts (Establishing validity in qualitative research, 2018).

Internal validity was addressed by cross-checking findings from multiple perspectives, while external validity was addressed by thoroughly describing the context of the research study so as to enable others to take a broad view of the findings and apply them to other similar settings.

#### **3.5.4 Reliability of the Instruments**

Noble and Smith, (2015: 34) state that evaluating the reliability of study findings requires the researcher to determine the accuracy of the research in relation to the application and appropriateness of the methods used and the integrity of the final conclusions. Leung, (2015: 326) adds that reliability refers to the extent to which the processes and results of the study can be replicated. The study used clearly defined questionnaires as data collection instruments. The structure of the questionnaire was such that it could be applied to test sample to check the reliability of the results.

### **3.6 Data Collection Method**

Upon presentation of an introductory letter, the researcher proceeded to distribute questionnaires prepared on the basis of the research objectives to the relevant respondents via direct approach within the vicinity of the Jomo Kenyatta Memorial Library.

#### **3.6.1 Data Analysis and Presentation**

The study collected qualitative as well as quantitative data through the questionnaires. According to Lewins, Taylor, and Gibbs (2010), the process of analyzing qualitative data involves interpreting the data into a form that explains in clear terms the views of the people on situations being investigated.

Content analysis was used to examine the qualitative data in order to identify common areas of concern among the respondents. Measures of central tendency, particularly percentages, were used to analyze the quantitative. The data was coded using Microsoft excel sheets and analyzed using Google forms. This data was presented in frequency tables, charts, and graphs.

### **3.7 Ethical Consideration**

The researcher obtained a letter of authority to collect research data from the office of the chairperson, Masters of Library and Information Science. The researcher sought to secure informed consent from the respondents by sensitizing them on the purpose and nature of the study. Participation was purely on a voluntary basis and the researcher was obligated to guarantee confidentiality for any information provide.

The researcher further committed to submit all his findings on this research topic to a plagiarism check to make certain that the work passed the originality test whilst giving due credit to all supporting works by other authors.

### **3.8 Chapter Summary**

This chapter covered the various aspects of research methodology. It discussed how the study was conducted from research design, population sampling to data collection. In addition it also touched on the validity of the instruments and its relation to the reliability of data collected. It set the stage for the researcher to embark on the subsequent chapter on research findings and presentation.

## CHAPTER FOUR

### DATA ANALYSIS, INTERPRETATION AND DISCUSSION

#### 4.0 Introduction

This chapter presents, analyzes, and interprets data, as well as discusses the study's findings. The aim of the study was to investigate the emerging role of librarians and information professionals in a digital environment at the University of Nairobi's Jomo Kenyatta Memorial Library. A combination of both quantitative and qualitative approaches was used in the data collection process. The findings were presented descriptively with the aid of charts, graphs, tables.

#### 4.1 Questionnaire Response Rate

Questionnaires were administered to library staff members and student users at the Jomo Kenyatta Memorial Library. The library being at the main campus, the very heart of all academic activities of the University of Nairobi, offered a convenient and conducive environment to approach willing respondents. 77% of the questionnaires administered, were filled and returned.

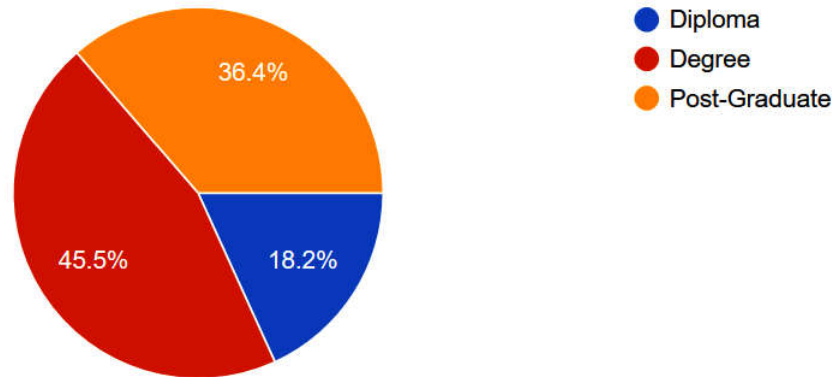
The total number of sampled respondents was 133 as indicated in the table below. From this number, 103 responded providing a response percentage of 77%. In the area of analysis and reporting, Babbie (1990) states that a 50% response rate is sufficient. He considered 60% to be better, while anything above 70% is regarded as very good. At 77%, the researcher considered this level of response to be more than adequate.

**Table 4.1 Questionnaire Response Rate**

<b>Respondents</b>	<b>Sample Size</b>	<b>Questionnaires Administered</b>	<b>Return Rate (%)</b>
Students	94	94	71 (75.5%)
Library Staff	39	39	32 (82%)
<b>Total</b>	<b>133</b>	<b>133</b>	<b>103 (77%)</b>

#### 4.1.1 Education Level of Library Staff

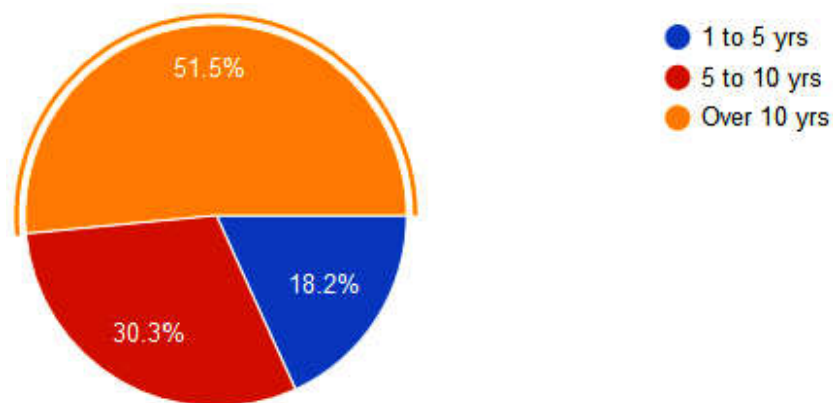
The library staff members among the respondents were asked to state their academic qualifications. 18% had diploma level qualifications, 46% were degree holders, and 36% had post-graduate qualifications.



**Figure 4.1: Library Staff Academic Qualifications**

#### 4.1.2 Library Staff Work Experience

Work experience can be an asset with regard to handling unique challenges at the work place. This study sought to establish the level of work experience among library staff. 18% had 1 to 5 years of work experience, 30% had 5 to 10 years of experience and 52% had over 10 years work experience. Figure 4.2 below illustrates the number of years of worked.

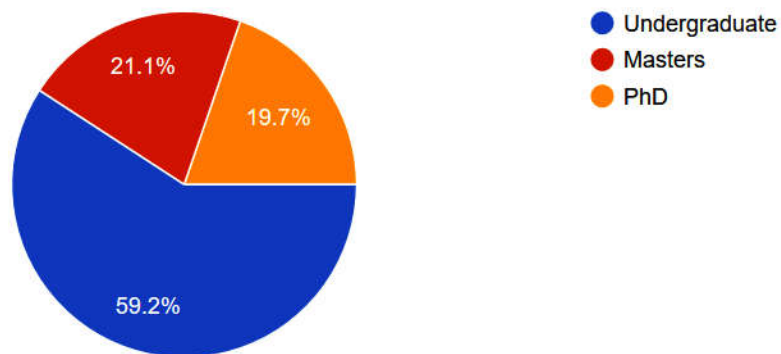


**Figure 4.2: Number of Years Worked**

### 4.1.3 Student Respondents

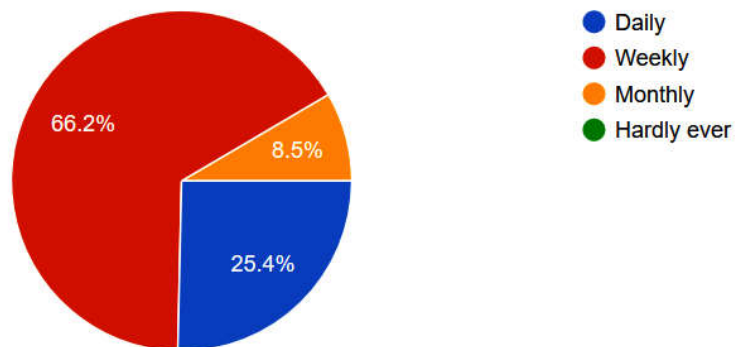
Of the students to which the questionnaires were administered to, 17 (24%) were less than 24 years of age, 36 (51%) were between the ages of 25 and 34 years, 11 (16%) were between 35 to 44 years and 7 (10%) were between 45 and 54 years of age.

With regard to their level of study, 42 (59%) of the respondents were undergraduate students, 15 (21%) were masters students and 14 (20%) were PhD students. Of this number, 52 (73%) were fulltime students and 19 (27%) were part time students. This clearly indicates that a greater percentage of the respondents are youthful; a category known for its receptiveness to technology and internet activity.



**Figure 4.3 Student Level of Study**

When asked how frequently they used the library, 47 (66%) of the respondents stated that they used the library on a weekly basis. 18 (25%) said they used the library daily and 6 (9%) said they used the library on a monthly basis. This indicates that a greater percentage of respondents are more inclined to using the library on a weekly basis which still provides sufficient opportunity to interact effectively with library staff and services.



**Figure 4.4 Frequency of Library Usage by Students**

## **4.2 Integration of ICTs in Library Operations**

The first objective of this study was to examine the adoption of technology in the provision of library services at the Jomo Kenyatta Memorial Library. This was determined by asking questions related to staff training and sensitization on emerging ICT trends in the library profession. 87.9% of library staff were found to have had some ICT related training in the last two years, while 12% had not.

Those respondents who had received training were also asked to indicate the areas in which they had been trained. Among the areas mentioned included - digital repository self-archiving with 5 (16%), online document collaboration tools 3 (9%), digital repository management 5 (16%), open access publishing 2 (6%), Turnitin anti-plagiarism software 10 (31%), Emerging ICT trends in the library profession 9 (28%), data/information security 9 (28%), Library Information Management System 12 (38%), and E-Resources & Open Access Publishing 6(19%). Only 4 (12%) said that they had not received any training, stating as reasons, that they had never been selected or called upon by their supervisors to attend an in-house training.

According to Youngok & Rasmussen (2006), education for information professionals must observe two aspects – the first one emphasizes proficiencies such as communication skills for gainful user interaction, as well as the ability to analyze trends. The other aspect addresses the need to develop technical and information skills for the day to day operational understanding of libraries in a digital environment. This puts the library in a good position to deliver quality, needs based, value added services in line with the needs and expectations of library users (Kamila 2013: 329).

### **4.2.1 Level of ICT Integration**

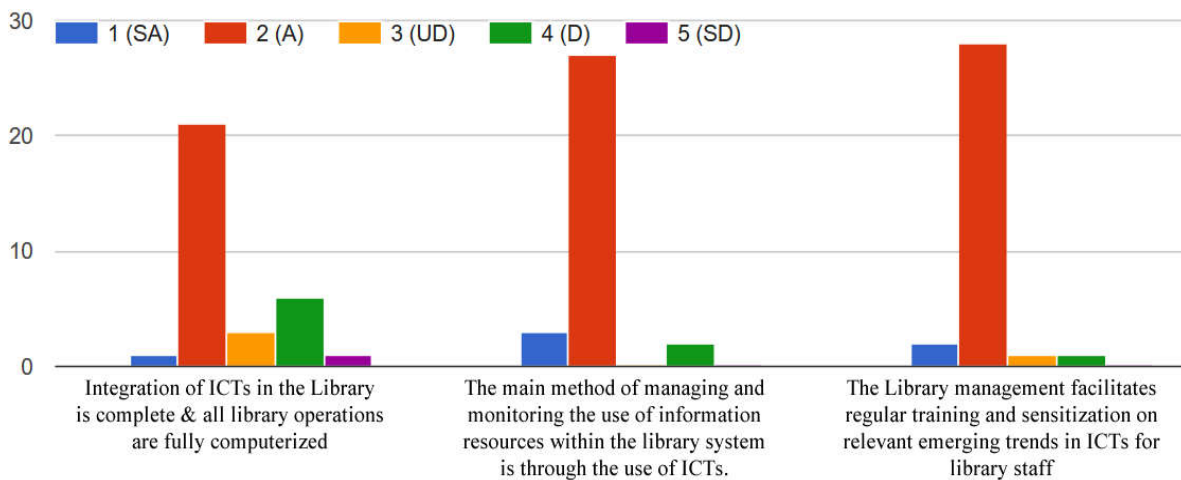
In order to get a better idea of the level of ICT integration in the provision of library services at the Jomo Kenyatta Memorial Library, the study sought to establish the following – whether the integration of ICTs in the Library was complete & all library operations were fully computerized, whether the main method of managing and monitoring the use of information resources within the library system is through the use of ICTs, and whether the Library management facilitates regular training and



sensitization on relevant emerging trends in ICTs for its library staff. Using the Likert scale of 1 to 5, where 1 is strongly agree and 5 is strongly disagree, each staff member was asked to indicate the extent to which they agreed or disagreed with the statement. On the question of whether the integration of ICTs in the library was complete and all library operations fully computerized, the responses came in with 1 (3%) strongly agreeing and 21 (65.6%) agreeing. Those who were undecided were 3 (9%), while those who disagreed and strongly disagreed collectively came in at 7 (21.8%).

This shows that a greater percentage of the library staff 22 (68.7%) consider the library operations to be sufficiently automated while 10 (31%) are either undecided or disagree with this position. This points to a level of disconnect between the respondents as to what the actual position is.

On whether the main method of managing and monitoring the use of information resources within the library system is through the use of ICTs, 3(9%) strongly agreed and 27 (84%) agreed while 2(6%) disagreed. On whether the library management facilitates regular training and sensitization on relevant emerging trends in ICTs for its library staff, 2(6%) strongly agreed, 28 (88%) agreed, 1 (3%) was undecided; while another 1 (3%) disagreed. These responses indicate that the library has largely embraced the use of technology in the management of its information resources while at the same time facilitating staff capacity building.



**Figure 4.5 Level of ICT Integration**

#### 4.2.2 Investment in Relevant ICT Infrastructure

The study also sought to find out the level at which the library had invested in key ICT infrastructures necessary for impactful integration of technologies in library operations. Using the Likert scale of 1 to 5, where 1 is strongly agree and 5 is strongly disagree, each staff member was asked to indicate the extent to which they agreed or disagreed with the listed possible areas of investment focus for the library management.

On the question as to whether sufficient investment had been made to ensure reliable internet access, 7(22%) strongly agreed, 22 (69%) agreed, 1 (3%) was undecided and 2(6%) disagreed. On the issue of wireless (wifi) access points, 3 (9%) strongly agreed that it was well catered for, 26 (81%) agreed, 1 (3%) was undecided, and 2 (6%) disagreed. With regard to the provision of laptops and desktop computers, 2 (6%) strongly agreed, 25 (78%) agreed, 2 (6%) were undecided and 3 (9%) disagreed. This concurs with Adeniji, Adeniji and Oguniyi (2011) in their study where they observed that the internet is the most widely used tool in academic libraries.

On the issue of anti-virus software, 3 (9%) strongly agreed that sufficient investment had been made, 24 (75%) agreed, 4 (13%) were undecided and 1 (3%) disagreed. 21 (66%) strongly agreed that anti plagiarism software was well provided and 10 (31%) agreed while 1 (3%) disagreed with this position. On the question of the provision of a library information management system, 23 (72%) strongly agreed, 8 (25%) agreed, and 1 (3%) was undecided. Regarding the provision of electronic information resources, 26 (81%) strongly agreed, and 6 (19%) agreed – there was no indecisiveness or opposition to this position. In their study, Jayalakshmi et-al (2018), corroborate this by stating that electronic resources are key to any digital library in an information society. E-resources are crucial for learning, teaching and research activities.

With regard to the provision of multi-media facilities, 2 (6%) strongly agreed, 16 (50%) agreed, 4 (13%) were undecided, 8 (25%) disagreed and 1 (3%) strongly disagreed. 1 (3%) strongly agreed that video conferencing facilities were provided, 2 (6%) agreed, 5 (16%) were undecided, 21 (66%) disagreed and 3 (9%) strongly disagreed that sufficient investment had been made to ensure this facility. On the question of computer labs, 3

(9%) strongly agreed and 26 (81%) agreed, while 3 (9%) disagreed. 4 (13%) strongly agreed that the library had reliable electricity supply and 25 (78%) agreed, while 3 (9%) disagreed. On whether there was sufficient provision of uninterrupted power supply units, 2 (6%) strongly agreed, 4 (13%) agreed and another 4 (13%) were undecided. However 21 (66%) disagreed and 1 (3%) strongly disagreed. When asked whether the library had a regularly updated website, 21 (66%) strongly agreed, 7 (22%) agreed, 1 (3%) was undecided and 2 (6%) disagreed.

On the issue of an institutional repository, 22 (69%) strongly agreed 10 (31%) agreed that sufficient investment had been made toward this. 2(6%) strongly agreed that investments had been made toward acquiring a resources search engine / discovery service and 12 (38%) agreed to this. However 9 (28%) were undecided and another 9 (28%) disagreed. On the issue of social media interaction and feedback, 2 (6%) Strongly agreed that this service was available and 5 (16%) agreed. 9 (28%) were undecided about this while a majority 16 (50%) disagreed. When it came to staff training and education, 3 (9%) strongly agreed and 26 (81%) agreed that sufficient investment had been made on it. 1 (3%) was undecided while 2 (6%) disagreed with this position.

The responses here were largely inclined toward the opinion that adequate investment had been made on ICT infrastructure. Save for a few areas namely – the provision of video conferencing facilities, the provision of uninterrupted power supply units, and the provision of the option to use social media to interact with information professionals and provide feedback.

**Table 4.2 Investment in Relevant ICT Infrastructure**

<b>Investment on Infrastructure</b>	<b>1 SA</b>	<b>2 A</b>	<b>3 UD</b>	<b>4 D</b>	<b>5 SD</b>	<b>Total</b>
Reliable internet access	7(22%)	22(69%)	1(3%)	2(6%)	0(0%)	32(100%)
Wireless (wi-fi) access point	3(9%)	26(81%)	1(3%)	2(6%)	0(0%)	32(100%)
Laptops & Desktop computers	2(6%)	25(78%)	2(6%)	3(9%)	0(0%)	32(100%)
Anti-virus software	3(9%)	24(75%)	4(13%)	1(3%)	0(0%)	32(100%)
Anti-plagiarism software	21(66%)	10(31%)	0(0%)	1(3%)	0(0%)	32(100%)
Library information management system	23(72%)	8(25%)	1(3%)	0(0%)	0(0%)	32(100%)
Electronic information resources	26(81%)	6(19%)	0(0%)	0(0%)	0(0%)	32(100%)
Multi-media facilities i.e. dedicated rooms & equipment – LCD projectors, Television, CD-DVD Players	2(6%)	16(50%)	4(13%)	8(25%)	1(3%)	31(97%)
Video conferencing facilities	1(3%)	2(6%)	5(16%)	21(66%)	3(9%)	32(100%)
Computer labs	3(9%)	26(81%)	0(0%)	3(9%)	0(0%)	32(100%)
Reliable electricity supply	4(13%)	25(78%)	0(0%)	3(9%)	0(0%)	32(100%)
Uninterrupted power supply (UPS) units	2(6%)	4(13%)	4(13%)	21(66%)	1(3%)	32(100%)
Regularly updated Library website	21(66%)	7(22%)	1(3%)	2(6%)	0(0%)	31(97%)
Institutional repository	22(69%)	10(31%)	0(0%)	0(0%)	0(0%)	32(100%)
Resource search engine / discovery services	2(6%)	12(38%)	9(28%)	9(28%)	0(0%)	32(100%)
Social media interaction / feedback	2(6%)	5(16%)	9(28%)	16(50%)	0(0%)	32(100%)
Staff training & education	3(9%)	26(81%)	1(3%)	2(6%)	0(0%)	32(100%)

#### **4.2.3 Influencing Factors Pushing the Library to Embrace ICTs in its Operations**

The study further sought to understand the possible influencing factors that are pushing the library to embrace ICT in its operations. Using the Likert scale of 1 to 5, where 1 is strongly agree and 5 is strongly disagree, respondents were asked to indicate the reasons they each felt were behind this move.

On the question of whether library users were an influencing factor, 22 (69%) strongly agreed and 4 (13%) agreed. The study found that a greater percentage of these library users were of a youthful age bracket who are more attuned to all things technology. This is in line with the findings by Best, Buhay and McGuire (2014), who referred to them as “digital natives” or “millennials” because of their high level of digital literacy. Only 1 (3%) disagreed with this.

On whether the University / library management was a deciding factor, 1 (3%) respondent strongly agreed and 26 (81%) agreed. However 2 (6%) were undecided and 1 (3%) disagreed. This indicates that the management's role in the adoption of ICTs is unquestionable, because it is at this level that policy and key decision making takes place.

On whether the need to maintain a competitive edge in the provision of academic information services had a role to play, 24 (75%) strongly agreed and 5 (16%) agreed that it did. This is in line with the findings by Porter & Millar (2001), who stated that organizations that anticipate the power of ICTs are able to control events and set new trends, while organizations that fail to acknowledge the impact of ICTs are compelled to accept the changes that others initiate and find themselves at a competitive disadvantage. Law, Leung, & Buhalis, (2009) further add that ICTs help to reduce costs while enhancing operational efficiency within the library, in addition to improving service quality and user experience.

23 (72%) strongly agreed and 6 (19%) agreed that the changing nature of the information medium was an influencing factor. In acknowledgement of this, Godwin and Parker (2008: 7) points to the use of online tools and applications that enable individuals to collaborate, contribute, share and interact with information using the internet as a platform.

Respondents strongly agreed at 19 (59%), and agreed at 7 (22%), that the need for better management of library information resources was also an influencing factor pushing the library to embrace ICTs. This is in line with the findings by Emojorho (2011), who states that innovations in ICTs have significantly affected the rate of data, information and knowledge conversion into electronic format, coupled with robust software that enables its effective and efficient management. This has revolutionized how knowledge is organized, stored, and retrieved.

**Table 4.3 Influencing Factors Pushing the Library to Embrace ICTs**

<b>Influencing factors</b>	<b>1 SA</b>	<b>2 A</b>	<b>3 UD</b>	<b>4 D</b>	<b>5 SD</b>	<b>Total</b>
Library users	22(69%)	4(13%)	0(0%)	1(3%)	0(0%)	27(85%)
University/Library Management	1(3%)	26(81%)	2(6%)	1(3%)	0(0%)	30(93%)
Need to maintain a competitive edge in the provision of academic information services	24(75%)	5(16%)	0(0%)	0(0%)	0(0%)	29(91%)
Changing nature of the information medium	23(72%)	6(19%)	0(0%)	0(0%)	0(0%)	29(91%)
Need for better management of Library information resources	19(59%)	7(22%)	0(0%)	0(0%)	0(0%)	26(81%)

#### **4.2.4 Statements Related to ICT Integration in the Library**

The study further posed a list of statements to library users, related to ICT integration in the library, which required the respondents to either agree to or disagree using the Likert scale of 1 to 5, where 1 is strongly agree and 5 is strongly disagree.

Respondents responded to the statement that the adoption of new technologies and innovations would have little effect toward improving service offering in the library, with only 1 (1.4%) strongly agreeing, but 21 (30%) disagreeing and an overwhelming 49 (69%) strongly disagreeing with this statement.

58 (82%) strongly agreed with the statement that a digital environment can significantly improve the academic library experience and an additional 13 (18%) agreed. The responses above are corroborated with the findings by Kaur and Sharda (2010) who state that convenience is the single most important factor in the process of retrieving information. Online services such as VPN and innovations such as resource discovery tools provide this convenience. This goes a long way toward improving service offering in the library and the academic experience.

On the statement that the University management should show leadership in the adoption of relevant technologies and innovation, 25 (35%) of the respondents strongly agreed and 45 (63%) agreed to this. However, 1 (1.4%) was undecided.

56 (79%) strongly agreed with the statement that librarians in specialized ICT related roles can help to address user needs and expectations and 14 (20%) agreed, while 1 (1.4%) was undecided. This agrees with the findings by Fourie (2004), who posits that information professionals need to take steps to ensure their continued relevance in an IT enabled future.

On the issue of whether the process involved in accessing electronic resources and digital services discourages student usage, 2 (3%) strongly agreed and 15 (21%) agreed while 17 (24%) were undecided. However, 33 (46%) disagreed to this statement and 4 (6%) strongly disagreed.

Lastly, 4 (6%) strongly disagreed with the statement that the University library was lagging behind in the adoption of new technologies and innovations and an additional 15 (21%) agreed. 26 (37%) were undecided while 22 (31%) disagreed and 4 (6%) strongly disagreed to the statement.

With a greater number of respondents being undecided on this statement, it points to the possibility that they probably didn't have any other institution to compare the University of Nairobi to, which can be translated to be in its favour.

**Table 4.4 Statements Related to ICT Integration in the Library**

<b>Statement</b>	<b>1SA</b>	<b>2A</b>	<b>3UD</b>	<b>4D</b>	<b>5SD</b>	<b>TOTAL</b>
Adoption of new technologies and innovations will have little effect toward improving service offering in the library.	1(1.4%)	0(0%)	0(0%)	21(30%)	49(69%)	71(100%)
A digital environment can significantly improve the academic / library experience.	58(82%)	13(18%)	0(0%)	0(0%)	0(0%)	71(100%)
The University management should show leadership in the adoption of relevant technologies and innovation.	25(35%)	45(63%)	1(1.4%)	0(0%)	0(0%)	71(100%)
Librarians in specialized ICT related roles can help to address user needs and expectations.	56(79%)	14(20%)	1(1.4%)	0(0%)	0(0%)	71(100%)
The process involved in accessing electronic resources and digital services discourages student usage.	2(3%)	15(21%)	17(24%)	33(46%)	4(6%)	71(100%)
The University library is lagging behind in the adoption of new technologies and innovations.	4(6%)	15(21%)	26(37%)	22(31%)	4(6%)	71(100%)

### **4.3 Emerging Role of the Librarian in a Digital Environment**

The prevailing digital environment has undoubtedly had an impact on the library profession. The study sought to establish the nature and extent of this impact.

#### **4.3.1 Impact of the Digital Environment on the Library Profession.**

The study sought to find out from the respondents how they felt the prevailing digital environment had impacted the library profession. This was an open question intended to elicit their personal opinions on the matter. Of the responses given, 3 (9%) said that ICTs had made work easier.



Prior to the advent of ICT enabled systems, routine tasks such as cataloguing and circulation services were all manual and time consuming, resulting in inefficiency. 4 (13%) stated that the digital environment had compelled the library to strive to be compliant so as to remain competitive. 7 (22%) stated that the emerging environment called for librarians to update their skills so as to keep up with emerging trends and remain relevant. To this effect, one respondent stated the following:

*“The librarian must now keep abreast with the new trends in Library and information profession, regular training is now mandatory, the librarian has evolved to an information provider rather than a custodian of books in a room”*  
(Respondent 4).

Another respondent stated that:

*“It has created a need for Librarians to seek skills that enable them to operate in a digital enabled environment so as to meet user expectations”* (Respondent 14).

The above responses concur with the findings by Massis (2014: 496) who asserts that librarians must be well-informed and fully familiarized with the preferred platforms used by modern library patrons in accessing digitized information materials.

5 (16%) of respondents stated that the digital environment had given rise to several innovative platforms where information could be stored and accessed with ease such as: the Digital Repository – an open access platform where academic works done under the umbrella of the University of Nairobi could be digitized and uploaded, to be accessed by users online. This and other subscription services to electronic books and journals have improved service offering and speed of access to academic material.

6 (19%) of respondents stated that the digital environment had given a new relevance to the library profession by creating new avenues of specialization such as knowledge management and digital librarianship. 1 respondent (3%) stated that the digital environment had resulted in some library staff members being unable to address ICT related queries. The respondent had this to say:

*“In some cases, library staff have found themselves ill equipped to conclusively handle certain queries related to online services or electronic resources”*  
(Respondent 13).

This could be as a result of lack of requisite training on relevant library systems and applications either due to lack of interest on the part of the library staff member or lack of opportunity to participate in training exercises. In their study, Batool and Ameen (2010) examined the level of ICT skills of academic librarians. Their study revealed that the librarians were only proficient in superficial aspects of computer usage such as word processing, and that they could not fully implement library automation without expert assistance.

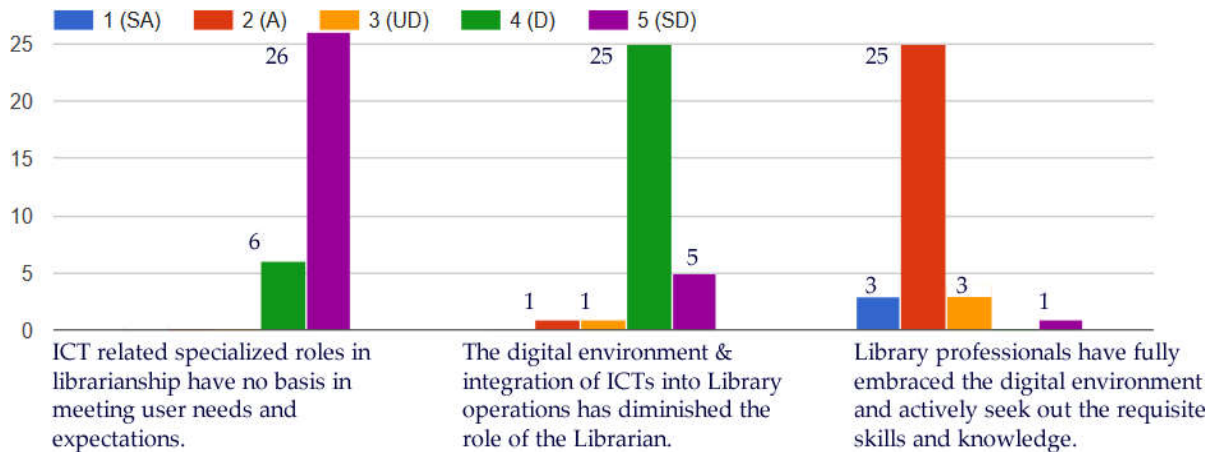
#### **4.3.2 Roles / Areas of Specialization in Librarianship Arising from the Digital Environment**

The study sought to find out what possible new roles or areas of specialization the digital environment had given rise to in the library profession. This was an open question tailored to bring forth the personal opinions of the respondents. A number of specialization areas were mentioned including – knowledge managers with 5 (16%) systems librarians at 3 (9%), electronic referencing librarians at 4 (13%), digital librarians at 3 (9%), Institutional repository managers at 3 (9%), and information managers / consultants at 6 (19%). This position agrees with Kamila (2013: 328) assertion that in a digital environment, the librarian must play the central role of a facilitator, ICT specialist, knowledge manager, educator, resource preserver, information specialist and research intermediary.

The prevailing digital environment requires librarians to possess skills and training in new innovative and emerging trends in the library profession. Similarly, Janakiraman, Ormsby & Subramanian (2016: 251) state that in the modern world, a background in ICT is necessary before taking up a librarianship job position. Consequently, new designations for information professionals with ICT qualifications include Systems Librarian, Electronic Resource Librarian, Library web application specialist, Head of research repository and Digital archives manager.

### 4.3.3 Implication of ICTs in the Library Environment

Using the Likert scale of 1 to 5, where 1 is strongly agree and 5 is strongly disagree, respondents were asked to indicate the extent to which they agreed or disagreed with a list of provided statements.



**Figure 4.6 Implication of ICTs in the Library Environment**

Here, the study sought to get a sense of the respondent's personal take on the implication of ICTs on the library profession. 6 (18%) disagreed on the statement that ICT related roles in librarianship have no basis in meeting user needs and expectations while an overwhelming 26 (81%) strongly disagreed. This coincides with the findings by Gaur and Kaushik (2014: 86), where he states that the rapid growth in technology has made possible the development of digitized information systems and the provision of information resources that are well managed and systematically organized so as to ensure ease of access and relevance of materials. In support of this, Verma (2015: 97) adds that the primary concern for librarians is that they are able to meet user needs by providing them with up to date, relevant and accurate information. With its considerable knowledge sources and simple approach, ICT guarantees the benefits that users demand (Janakiraman, Ormsby & Subramanian, 2016), affirming that ICTs are indeed crucial to meeting user needs and expectations.

On the issue of whether the digital environment & integration of ICTs into Library operations had diminished the role of the Librarian, 1 (3%) agreed, 1 (3%) was undecided while 25 (78%) disagreed and 5 (15%) strongly disagreed. The is in line with

Janakiraman, Ormsby & Subramanian (2016: 251) who state that in the modern world, a background in ICT is necessary before taking up a librarianship job position, as one may be required to assume roles related to library networking, e-library development, library website development and maintenance; giving rise to new designations for information professionals.

On the statement of whether Library professionals had fully embraced the digital environment and were actively seeking out the requisite skills and knowledge, 3 (9%) strongly agreed and 25 (78%) agreed to this. 3(9%) were undecided and 1 (3%) strongly disagreed. This agrees with the findings by Adekunle et al (2007), which established that librarians view ICTs positively, and a growing percentage acknowledges its usefulness.

**Table 4.5 Implication of ICTs in the Library Environment**

<b>Statement</b>	<b>1 SA</b>	<b>2 A</b>	<b>3 UD</b>	<b>4 D</b>	<b>5 SD</b>	<b>TOTAL</b>
ICT related specialized roles in librarianship have no basis in meeting user needs & expectations.	0(0%)	0(0%)	0(0%)	6(19%)	26(81%)	32(100%)
Integration of ICTs into Library operations has diminished the role of the Librarian.	0(0%)	1(3%)	1(3%)	25(78%)	5(16%)	32(100%)
Library professionals have fully embraced the digital environment & actively seek out the requisite skills / knowledge.	3(9%)	25(78%)	3(9%)	0(0%)	1(3%)	32(100%)

#### **4.3.4 Areas of Competence with Regard to the Digital Environment**

The study also sought to determine how the respondents regarded specific areas of competence against the backdrop of the prevailing digital environment. Using the Likert scale of 1 to 5, where 1 is extremely important and 5 is not important, respondents were asked to rate the importance of each area of competence.

On electronic referencing and citation, 75% felt that it was extremely important and 25% felt that it was very important. With the availability of electronic information resources, it makes sense that knowledge in electronic referencing and citation would be highly sought after. With regard to web design and management, 3% felt it was extremely important, 38% felt that it was very important, 56% felt that it was fairly important and 3% felt that it was slightly important.

These results were in agreement with the findings by Babu, Vinayagmoorthy, and Gopalakrishnan (2007) who in their study assessed the ICT skills of 171 librarians and found that while 48% of them had some knowledge of integrated library software, they were completely lacking in web design.

On the management of institutional repositories, 72% felt that it was extremely important and 28% felt that it was very important. On the issue of emerging trends in information services, 78% felt that this was extremely important and 19% felt that it was very important while 3% felt that it was only fairly important. 25% felt that the use of social media platforms in library services was extremely important, 44% felt that it was very important and 31% felt that it was fairly important. 75% felt that digitization and digital preservation was extremely important and 22% felt that it was very important while 3% felt that it was fairly important. Finally on the issue of knowledge management, 78% felt that it was extremely important, and 19% felt that it was very important while 3% felt it was fairly important.

These responses were corroborated by the findings in “4.3.2” above where respondents mentioned a number of possible new roles and areas of specialization which the digital environment had given rise to in the library profession. These included - Institutional repository managers, knowledge managers, and digital librarians as well as electronic referencing librarians. This shows that as our environment continues to be reshaped by information technology, information professionals are moving to secure a place for themselves in the future by embracing these new roles.

**Table 4.6 Areas of Competence**

<b>Area of competence</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>TOTAL</b>
Electronic referencing & Citation	24(75%)	8(25%)	0(0%)	0(0%)	0(0%)	32 (100%)
Web design & management	1(3%)	12(38%)	18(56%)	1(3%)	0(0%)	32 (100%)
Management of institutional repositories	23(72%)	9(28%)	0(0%)	0(0%)	0(0%)	32 (100%)
Emerging trends in information services	25(78%)	6(19%)	1(3%)	0(0%)	0(0%)	32 (100%)
Use of social media platforms in library services	8(25%)	14(44%)	10(31%)	0(0%)	0(0%)	32 (100%)
Digitization & digital preservation	24(75%)	7(22%)	1(3%)	0(0%)	0(0%)	32 (100%)
Knowledge management	25(78%)	6(19%)	1(3%)	0(0%)	0(0%)	32 (100%)

#### **4.4 Challenges Facing the Library in its Efforts to Integrate ICTs into its Operations**

The study sought to find out what possible challenges the library faced in its efforts to fully integrate its operations with ICT technologies and innovations. This was an open question tailored to elicit the personal views of the respondents.

Financial constraints or lack of adequate funds was identified by 11 (34%) of the respondents as being a major challenge. This is position is further aggravated by the ongoing cash flow problems that the University of Nairobi has been facing which has resulted in a string of austerity measures.

2 (6%) of the respondents felt that there wasn't sufficient support from management to effectively enable ICT integration in library operations. 10 (31%) of the respondents cited that there was a lack of relevant training for staff members to empower them with the requisite skills and technical knowhow. This agrees with the findings by Egberongbe (2011), who states that e-resources are popular among researchers and scholars because they offer current and relevant information. However, practical use of the e-resources does not compare to the high cost of acquiring them. He states that consistent training programmes are essential for effective use of electronic resources.

Lack of strong/committed leadership was stated by 4 (13%) of the respondents as being a challenge, with one respondent claiming that the current leadership lacked vision. Another challenge that was mentioned was the lack of adequate infrastructure by 5 (16%) of the respondents. 1 (3%) mentioned the prohibitively high cost of putting in place the infrastructure. Similarly in their study, Adekele and Olorunsola (2010) indicate that the problem of inadequate infrastructure facilities, low bandwidth and Internet downtime in academic libraries is a major challenge to integrating ICTs to library operations.

Resistance to or fear of change was mentioned as a challenge by 3 (9%). This would be expected especially with the more traditional librarians. This is corroborated by the findings by Eguavoen (2011), where he states that the fear of some information professionals in developing countries toward ICTs is expanding the digital divide.

Finally, 2 (6%) respondents stated that the shortage of staff was also a challenge. They asserted that for some time now the University of Nairobi Library department has been plagued by staff deficit resulting from staff retirements with very low subsequent recruitment.

## 4.5 User Experience

The study sought to understand the respondents' user experience.

### 4.5.1 Approaches to Improving Access to Information Resources and Library Experience.

The study posed a list of approaches and asked the students to indicate the extent to which they thought each approach could improve access to information resources, and the library experience overall. This was done using the Likert scale of 1 to 5, where 1 is strongly agree and 5 is strongly disagree

**Table 4.7 Approaches to Improving Library Experience / Access to Information Resources**

<b>Approaches</b>	<b>1SA</b>	<b>2A</b>	<b>3UD</b>	<b>4D</b>	<b>5SD</b>	<b>TOTAL</b>
Provision of electronic information resources	55(77%)	13(18%)	1(1.4%)	1(1.4%)	1(1.4%)	71(100%)
User training on access and use of electronic information resources	37(52%)	24(34%)	9(13%)	0(0%)	1(1.4%)	71(100%)
Information literacy and communication skills classes	11(15%)	40(56%)	17(24%)	2(3%)	1(1.4%)	71(100%)
Knowledgeable and competent staff	46(65%)	24(34%)	0(0%)	0(0%)	1(1.4%)	71(100%)
Dynamic user friendly website	30(42%)	40(56%)	0(0%)	0(0%)	1(1.4%)	71(100%)
Librarians in specialized ICT related roles	49(69%)	19(27%)	2(3%)	0(0%)	1(1.4%)	71(100%)
Provision of remote access service to electronic information resources	23(32%)	22(31%)	21(30%)	3(4%)	2(3%)	71(100%)
Use of social media to communicate / convey feedback	11(15%)	17(24%)	31(44%)	11(15%)	1(1.4%)	71(100%)

When asked whether the provision of electronic information resources would improve the library experience, 55 (77%) of the respondents strongly agreed and 13 (18%) agreed. 1 (1.4%) was undecided while another 1 (1.4%) disagreed and strongly disagreed.



With regard to user training on access and use of electronic information resources, 37 (52%) of the respondents strongly agreed and 24 (24%) agreed, while 9 (13%) were undecided. Only 1 (1.4%) respondent strongly disagreed to this.

11 (15%) respondents strongly agreed and 40 (56%) agreed that information literacy and communication skills classes could help to improve the library experience. 17 (24%) were undecided while 2 (3%) disagreed and 1 (1.4%) strongly disagreed.

46 (65%) of the respondents strongly agreed that knowledgeable and competent staff were essential to improving the library experience. 24 (34%) agreed and 1 (1.4%) strongly disagreed. 30 (42%) strongly agreed that a user friendly website could equally improve the library experience and 40 (56%) agreed, while 1 (1.4%) strongly disagreed.

Respondents were also asked whether librarians in specialized ICT related roles could help to improve the library experience. 49 (69%) strongly agreed, 19 (27%) agreed and 2 (3%) were undecided. Only 1 (1.4%) strongly disagreed.

On the issue of providing remote access services to electronic information resources, 23 (32%) strongly agreed, 22 (31%) agreed and 21 (30%) were undecided. 3 (4%) disagreed and 2 (3%) strongly disagreed to this. A combined total of 45 (63%) of the respondents were positive about this approach to improving the library experience. This agrees with Jayalakshmi et-al (2018), where he states that the provision of remote access to e-resources is an effective service provided by a library which serves to connect users to their desired information flexibly from any location.

When asked whether the use of social media to communicate / convey feedback in the library could help to improve the library experience, 11 (15%) strongly agreed, 17 (24%) agreed and a majority 31 (44%) were undecided. 11 (15%) disagreed and 1 (1.4%) strongly disagreed. From this we can see that majority of the students were undecided about social media as a communication tool. This can be attributed to it never having been piloted as a method of user feedback within the library. As such, the respondents were uncertain about its ability to work.

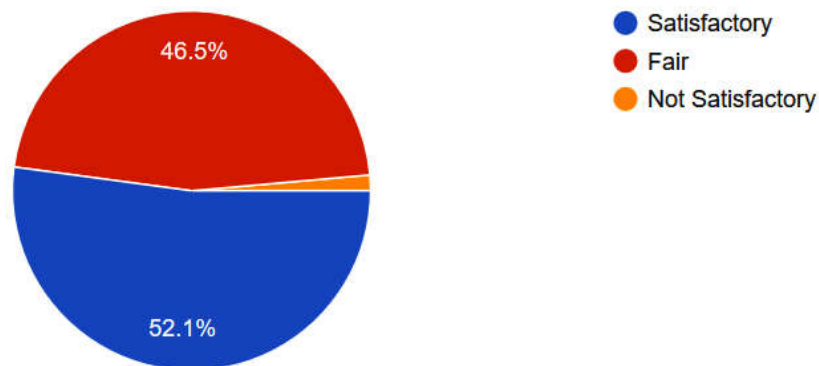
According to Sieck (2015) however, as much as it remains informal and experimental in most libraries, social media has the capacity to enable a closer relationship between libraries and library users.

#### 4.6 Meeting User Needs

User needs have evolved in the face of the prevailing digital environment. The study sought to find out how library services have evolved to meet these user needs.

##### 4.6.1 Quality of Library Services and Facilities Provided

The study additionally sought to find out how the students rated the quality of library services and facilities provided at the Jomo Kenyatta Memorial Library? Choices of Satisfactory, Fair and Not Satisfactory were given to the respondents. From this, 37 (52%) of the respondents said that the services and facilities were satisfactory and 33 (47%) said that the services were fair. Only 1 (1.4%) said that the services were not satisfactory.



**Figure 4.7 Quality of Library Services Provided**

The reasons provided by the respondents for their position were as follows: 7 (10%) of the respondents felt that Library staff members were knowledgeable and helpful whenever they had an issue or query related to library services or information resources. However a slightly higher 9 (13%) of the respondents felt that library staff members were not sufficiently knowledgeable or confident with regard to the same issues.

6 (8.4%) stated that the number of computers provided by the library was insufficient and could not effectively cater for the growing number of students hoping to access electronic information resources. They added that many computers become defective through age or continued use over time, and had not been repaired or replaced. In addition to this, 9 (13%) of the respondents stated that the internet and wifi connectivity in the library was unreliable and often experienced downtimes. Only 2 (3%) felt that the internet speeds were good allowing for quick browsing and accessing to online library services.

On accessing electronic information resources, 9 (13%) of the respondents felt that the process was complicated and lengthy. This was probably in reference to the process where students are required to register by creating an official students e-mail account, followed by a network access account before gaining access to library electronic resources. These measures have been put in place so as to ensure that only verified UoN students have access to the material. In contrast to this position, 5 (7%) of the respondents said that access to information resources was easy and efficient. An additional 11 (15%) said that the electronic information resources were relevant and useful.

Finally, 8 (11%) of the respondents stated that the OPAC was unreliable because some books could not be located in the shelves, and it also couldn't give the availability status of books in the shelves. According to a study by Mathews and Pardue (2009) the main ICT skills required of librarians in this digital age include online database searching, web 2.0 tools, networking, web development, library automation, computer applications and computer hardware. Given the responses above, it is clear that the library staff in this case are lacking in a good number of these skills.

#### **4.6.2 User Recommendations toward Improving Service Delivery and User Experience**

Finally, the study sought to draw out any recommendations the respondents may have had on how service delivery and the user experience overall can be enhanced. The respondents were required to express their own personal views in this case.

14 (19.7%) of the respondent suggested that the library should provide more computers for student usage. This would enable them to better access online reading material and resources. One respondent had this to say about the situation:

*“The student traffic in the computer labs is high and the computers very few”  
(Respondent 11)*

Improving the wifi / internet connectivity was another recommendation made by 16 (23%) of the respondents, as well as increasing the number of power outlets, 4 (6%).

20 (28%) of the respondents recommended that the library management focus on staff training so as to improve their skills & competence with regard to what was rapidly becoming the main method of accessing academic information resources. One respondent had this to say:

*“Library staff could be more helpful if they were regularly trained on the digital services and information resources offered” (Respondent 24)*

Another respondent stated that:

*“Librarians need to be more familiar with these modern trends so that they are  
able to meet students at their point of need” (Respondent 30)*

This point of view was held by the majority of respondents who provided their observation, indicating that it was a major area of concern for them.

3 (4%) of the respondents recommended that the library promote the remote access service which would enable students to access electronic information resources from the comfort of their homes or offices, and in the process, reduce crowding in the library computer labs. 11 (15%) suggested that the library should try to simplify the process of accessing e-resources so that it may have more impact; in addition to this, they also recommended regular refresher trainings for students should be done to supplement the information they get during orientation. These responses place the ball in the library management’s court to carefully assess the stated areas of need and formulate a plan of action to address the short comings in a bid to ensure better service delivery.

#### **4.7 Chapter Summary**

This sought to present the results of the analyzed data. The study has examined the level of ICT integration into library operations in the University of Nairobi's Library system, and the readiness level of library staff members to tackle it. It has also covered the emerging roles that have resulted from the prevailing digital environment as well as the consequent challenges. Additionally, it has also covered the view of student users with regard to the extent to which their needs and expectations have been met in the prevailing digital environment and their recommendations to improving the situation.

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS**

#### **5.0 Introduction**

This chapter focuses on the summary of the study's key findings from chapter four, the conclusions and recommendations based on the objectives of the study. The aim of this study was to investigate the emerging role of librarians and information professionals in a digital environment at the Jomo Kenyatta Memorial Library. The specific objectives of this study were to examine the adoption of technology in the provision of library services at the Jomo Kenyatta Memorial Library, to examine the changing needs of library users in the digital environment, to explore the emerging role of librarians in a digital environment at the Jomo Kenyatta Memorial Library, and to propose possible steps the Library management can take to facilitate the adoption of relevant technologies to this effect.

#### **5.1 Summary of the Findings**

These findings were guided by the study's research objectives.

##### **5.1.1 The Adoption of Technology in the Provision of Library Services**

The findings showed that 88% of the respondents had received some ICT related training in the last two years, while 12% had not. Staff training builds knowhow and confidence in the use of ICTs. In addition, it cultivates an accommodating attitude toward ICTs, spurring the candidates to want to know more. Nowadays, new technologies and innovations are being announced almost daily. Regular training on these emerging trends is critical to ensuring that librarians remain up-to-date.

The findings also showed that a greater percentage of the respondents (69%) regarded the integration of ICTs to be largely complete in most library operations. On whether the Library had made sufficient investment in key ICT infrastructures necessary for impactful integration, of the collective listed areas of investment, a mean of 8.6 strongly agreed and a mean of 14.9 agreed. On the same matter, a mean of 5.5 disagreed while 0.2 strongly disagreed.

This points to the recognition and appreciation of ICTs and ICT infrastructure on the part of the librarians and the management. Investing in this area goes hand in hand with cultivating interest and facilitating capacity building. This will eventually culminate in the advent of specific job roles tailored for specific user needs.

The research findings further showed that 82% of the respondents agreed that library users were a major influencing factor pushing the library to embrace ICTs in its operations, as opposed to 3% who disagreed. Modern library users are largely of a youthful category especially in academic libraries. They thrive in environments where they can access information quickly and flexibly. It is therefore no wonder that they would form a significant percentage of the factors pushing the library to go fully digital.

Additionally 84% agreed that the management also played an important role in this as opposed to 3% who disagreed. The management of any organization is undeniably at the helm of overseeing any activities that serve to progress that organization. This is often at the behest of its stakeholders and the need to meet strategic goals.

81% agree that the need for better management of Library information resources was a major influencing factor; however the factors that got the most overwhelming support from respondents were: the need to maintain a competitive edge in the provision of academic information services and the changing nature of the information medium, both of which got 91% of respondents agreeing to with none disagreeing. This shows that the respondents recognize the power of ICTs in enhancing operational efficiency while reducing costs as well as the modern formats of information resources which offer flexibility and accessibility.

Gone are the days when librarians would manually and painstakingly offer services to users, a method which while effective, was inefficient and cumbersome. ICTs offer efficiency, precision and speed. In addition, they have created specialization opportunities for librarians where they are able to meet users at their specific points of need.

### **5.1.2 The Changing Needs of Library Users in a Digital Environment**

The study posed a list of approaches which could help to improve access to information resources, and the library experience overall.

The findings showed that 77% of the respondents strongly agreed on the provision of electronic information resources, and this strongly points to the changing methods of accessing information today. It shows that students prefer to access academic material electronically because it offers flexibility, speed and convenience. 65% strongly agreed that knowledgeable and competent staff were an important factor and an additional 69% strongly agreed that librarians in specialized ICT related roles could help to improve information resource access and the library experience. This shows that for the users, it is not enough that librarians should be knowledgeable, but they should equally show competence in ICT related queries. They should strive to be recognized not just as librarians, but as subject experts, communicators, and knowledge and resource managers. These are roles that modern library users can relate to because they understand their needs and are well equipped to deliver them.

A list of statements on ICT integration in the library was posed to the respondents. 69% of the respondents strongly opposed the statement that the adoption of new technologies and innovations would have little effect toward improving service offering in the library, and in addition, an overwhelming 82% strongly agreed with the statement that a digital environment can significantly improve the academic / library experience. These responses clearly indicate an affinity for an ICT enabled academic environment on the part of library users. Modern library users are drawn to innovative solutions that have the potential to make their academic lives more bearable. An ICT enabled environment staffed with similarly empowered Librarians caters for these needs.



Subsequently, 79% of the respondents strongly agreed with the statement that librarians in specialized ICT related roles could help to address user needs and expectations. This affirms the urgent need for information professionals to seek relevant ICT training so as to equip themselves with the requisite skills and expertise needed to confront a connected and automated environment. These skills, coupled with the essential core knowledge of their profession which they already possess will cement their relevance in the information services sphere.

Overall, the findings show that 52% of the respondents felt the quality of library services offered was satisfactory while 46% felt that it was fair. This position leaves plenty of room for more to be done toward improving the academic library experience. Investing in modern infrastructure and furnishing the library with up to date IT equipment is not enough to sufficiently satisfy user needs and expectations. The human element is equally important in the form of skilled personnel in specialized library roles.

### **5.1.3 The Emerging Role of Librarians in a Digital Environment**

The study sought to find out how the digital environment had impacted the library profession. Findings derived from the respondents show that at least 22% felt that the digital environment called for librarians to update their skills so as to keep up with emerging trends in the profession. 16% felt that the digital environment had given rise to several innovative platforms where information could be stored and accessed flexibly and efficiently. 19% felt that the digital environment had given a new significance to the library profession by creating new avenues of specialization. Librarians have been entrusted with custodianship over the University's academic texts and wealth of scholarly output. They therefore need to ensure that they are always in tune with new developments and innovations in their profession so as to be able to provide the right information to the right users at right time, in a manner that is both efficient and flexible.

The findings highlighted several areas of specialization that have risen from the digital environment including knowledge management, system librarianship, information consultancy and electronic referencing librarianship.

Recognition of the impact of ICTs on the library profession is evident, as well as the specific areas where it may be applied to make a difference. These findings call for librarians to assume the new roles that the digital environment at the Jomo Kenyatta Memorial Library demands of them.

#### **5.1.4 Challenges in Integrating ICTs into Library Operations**

The study found that financial constraints were a major challenge to integrating ICTs into library operations, this resulting from the austerity measures effected by the University management. In the face of other equally important areas of focus in the University's calendar, consistency and commitment also waned. 31% of the respondents referred to a lack of regular training for staff members to empower them with the skills and technical knowhow necessary to fully exploit ICT systems.

#### **5.2 Conclusion**

We are in the digital era where ICTs have permeated into every industry and workplace. Keeping up with the rapidly changing dimensions of the digital environment can be a challenge for many in the library profession. This is more so when faced with catering to youthful students who thrive in the same digital environment. Ironically, the wealth of information that is readily available today has made it increasingly difficult to locate relevant information materials. Students are overwhelmed by the information explosion and constantly have to deal with information overload. The role of the librarian is therefore to bridge this gap by identifying and understanding the needs of the users, locating the relevant information resources, packaging it in a friendly format and availing the same to the user. Key to delivering effective library services is embracing the digital environment and making use of the tools and technologies it has to offer.

The library management needs to do more to foster the creation of progressive areas of specialization in the library, where staff can take up roles that address specific challenges of a modern and technical nature. A need which is confirmed by the view of a majority of respondents that specialized ICT driven roles can help to address user needs and expectations.

### **5.3 Recommendations**

Given the finding highlighted in this study, the researcher recommends the following steps:

#### **5.3.1 Investment in Human Capital**

The library management needs to facilitate training for staff members that equips them with knowledge and skills that are relevant to the modern library environment. This will ensure that the subscribed electronic resources and services are well utilized; in addition, the staff will in turn sensitize the students on the same. This will go a long way toward meeting user needs and expectations.

#### **5.3.2 User Feedback**

In this ICT driven environment, library users tend to be very receptive to modern approaches of accessing information. The library management should regularly engage library users in forums so as to get their views and opinions on the services and facilities offered by the library. It is important to ensure that the library is keeping up with current trends.

#### **5.3.3 Cultivating Positive Change**

The management should ensure that their efforts towards full ICT integration and the creation of specialized ICT positions for librarians are felt by all stakeholders. The emerging digital environment dictates that the traditional librarian must give way to more modern information professionals.

## **5.4 Suggested Areas of Further Research**

Potential areas of study derived from these findings include:

### **5.4.1 Capacity Building in Academic Libraries**

A study on the capacity building methods in academic libraries and their success in empowering staff members to effectively manage library automation. This study will be aimed at scrutinizing how these libraries are going about training their staff to meet user needs and expectation in this information age.

### **5.4.2 Approaches to ICT Integration and its Impact on Library Operations**

A study on how University libraries in Kenya approach the issue of ICT integration, and how ICTs have impacted their operations; this study should be aimed at identifying differences in approach as well as the guiding policies in the automation of services.

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## APPENDICES

### APPENDIX I: Letter of Introduction

Timothy S. Nzioki  
Department of Library and Information Science  
University of Nairobi  
P.O. Box 30917-00100  
Nairobi, Kenya

Dear Respondent,

#### **RE: INTRODUCTION LETTER FOR RESEARCH STUDY**

I am a student at the University of Nairobi pursuing a Masters degree in Library and information Science under the Faculty of Arts. I am conducting a research study titled “*The Emerging Role of Librarians in a Digital Environment: A Case of the University of Nairobi, Jomo Kenyatta Memorial Library.*” The study necessitates the collection of relevant data from students and staff of the University of Nairobi, and you have been selected to participate in this study.

The specific objectives of the study are to examine the adoption of technology in the provision of library services, examine the changing needs of library users in the digital environment, explore the emerging role of librarians in a digital environment and to propose possible steps the Library management can take to facilitate the up-take of relevant technologies at the University of Nairobi, Jomo Kenyatta Memorial Library. The observations and insights you provide are solely for the academic purposes of this study and shall remain strictly confidential.

Thank you for your time and cooperation.

Yours sincerely,

Timothy S. Nzioki  
Reg. No: C54/83836/2016

**APPENDIX II: Transmittal Letter**



**UNIVERSITY OF NAIROBI**

**FACULTY OF ARTS**

**DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE**

Telephone: +254 20 318262, Ext. 28095  
Telegram: Varsity  
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P.O. Box 30197- 00100 GPO  
Nairobi, Kenya.  
dnjiraine@uonbi.ac.ke

Our Ref: UON/CHSS/DLIS/303

Date 28/09/2017

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

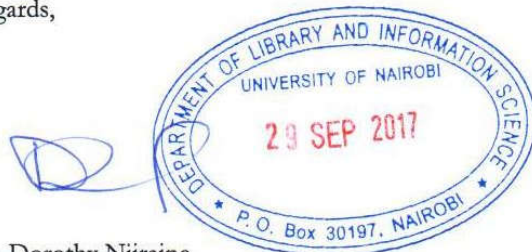
**RE: RECOMMENDATION FOR NZIOKI TIMOTHY – REG NO: C54/83836/2016.**

The above named is a bonafide student at the University of Nairobi undertaking a Master of Library and Information Science (MLIS). He is currently in the process of collecting data as part of the requirements for the course.

His topic is **“The Emerging Role of Librarians in a Digital Environment: A Case of the University of Nairobi”**.

Any assistance accorded to him will highly be appreciated.

Regards,



Dr. Dorothy Njiraine  
Ag. Chairperson  
Department of Library & Information Science (DLIS)



**APPENDIX III: Questionnaire for Library Staff**

All Information collected here is strictly for the use of academic research and as such, your feedback will be treated with utmost confidentiality. Carefully read and complete the questionnaire.

**PART 1: Bio Data**

1. What is your age group?

- Less than 24 yrs       25 – 34 yrs       35 – 44 yrs       45 – 54 yrs   
 54 yrs and above

2. What is your highest level of education attained?

- Diploma       Degree       Post-Graduate

3. How long have you worked in the University under the library department?

- 1 to 5 Years       5 to 10 Years       Over 10 Years

**PART 2: Integration of ICTs in Library Operations**

4. Have you received any training on ICT driven emerging trends in your profession in the last two years?

- Yes       No

a. If “Yes”, indicate the area of training received.

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b. If “No”, give reasons why.

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5. To what extent would you agree to the following statements as relates to the integration of ICTs at the Jomo Kenyatta Memorial Library? Tick according to the provided scale:

**(1 - Strongly Agree | 2 - Agree | 3 - Neutral | 4 - Disagree | 5 - Strongly Disagree)**

Statement	1	2	3	4	5
Integration of ICTs in the Library is complete & all library operations are fully computerized					
The main method of managing and monitoring the use of information resources within the library system is through the use of ICTs.					
The Library management facilitates regular training and sensitization on relevant emerging trends in ICTs for library staff					

6. Investment in relevant ICT infrastructure is necessary for any meaningful ICT integration in the Library. To what extent would you agree that the following investments have been made toward proper ICT integration? Tick appropriately according to the provided scale:

**(1 – Strongly Agree | 2 – Agree | 3 – Neutral | 4 – Disagree | 5 – Strongly Disagree)**

<b>Infrastructure</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Reliable internet access					
Laptops & desktop computers					
Anti-virus software					
Anti-plagiarism software					
Library information management system					
Electronic information resources					
Wireless (wi-fi) access point					
Multi-media facilities i.e. dedicated rooms and equipment – LCD projectors, Television, CD-DVD Players					
Video conferencing facilities					
Computer labs					
Reliable electricity supply					
Uninterrupted power supply (UPS) units					
Regularly updated Library website					
Institutional repository					
Resource search engine / discovery services					
Social media interaction / feedback					
Staff training & education					

7. To what extent would you agree with the following suggested influencing factors that are pushing the library to embrace ICT in its operations?

**(1 - Strongly Agree | 2 - Agree | 3 - Neutral | 4 - Disagree | 5 - Strongly Disagree)**

<b>Influencing factors</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Library users					
The University/Library Management					
The need to maintain a competitive edge in the provision of academic information services					
The changing nature of the information medium					
The need for better management of Library information resources					

**PART 3: Emerging Role of the Librarian in a Digital Environment**

8. In your opinion, how has the prevailing digital environment impacted the library profession?

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9. In your view, what possible new roles and areas of specialization has the digital environment given rise to in the library profession?

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10. To what extent would you agree with the statements below? Tick appropriately according to the provided scale.

**(1 - Strongly Agree | 2 - Agree | 3 - Neutral | 4 - Disagree | 5 - Strongly Disagree)**

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
ICT related specialized roles in librarianship have no basis in meeting user needs and expectations.					
The digital environment & integration of ICTs into Library operations has diminished the role of the Librarian.					
Library professionals have fully embraced the digital environment and actively seek out the requisite skills and knowledge.					

11. How do you rate the importance of following areas of competence in your profession with regard to the prevailing digital environment? Tick appropriately according to the provided scale.

**(1 –Extremely Important | 2 – Very Important | 3 – Fairly Important | 4 – Slightly Important | 5 – Not Important)**

<b>Area of Competence</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Electronic referencing and citation					
Web design & management					
Management of institutional repositories					
Emerging trends in information services					
Use of social media platforms in library services					
Digitization & digital preservation					
Knowledge management					

**PART 3: Challenges**

12. In your view, what challenges does the library face in its efforts to fully integrate its operations with ICT technologies and innovations.

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**THANK YOU FOR YOUR TIME AND CONTRIBUTION TO THIS STUDY**

**APPENDIX IV: Questionnaire for Students**

All Information collected here is strictly for the use of academic research and as such, your feedback will be treated with utmost confidentiality. Carefully read and complete the questionnaire.

**PART 1: Bio Data**

1. What is your age bracket?

- Less than 24 yrs       25 – 34 yrs       35 – 44 yrs       45 – 54 yrs   
 54 yrs and above

2. What is your current level of study?

- Undergraduate       Masters       PhD

3. Into which category do you fall?

- Full time student       Part time student

4. How frequently do you use the library?

- Daily       Weekly       Monthly       Hardly ever

**PART 2: User Experience**

5. Using the scale provided, indicate the extent to which you think the approaches outlined below can improve / have improved access to information resources, and the library experience overall::

**(1 - Strongly Agree | 2 - Agree | 3 - Neutral | 4 - Disagree | 5 - Strongly Disagree)**

<b>Approaches</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Provision of electronic information resources					
User training on access and use of electronic information resources					
Information literacy and communication skills classes					
Knowledgeable and competent staff					
Dynamic user friendly website					
Librarians in specialized ICT related roles					
Provision of remote access service to electronic information resources					
Use of social media to communicate / convey feedback to Librarians					

6. To what extent would you agree with the following statements with regard to integration of ICTs in the library? Tick according to the provided scale:  
**(1 - Strongly Agree | 2 - Agree | 3 - Neutral | 4 - Disagree | 5 - Strongly Disagree)**

Statement	1	2	3	4	5
Adoption of new technologies and innovations will have little effect toward improving service offering in the library.					
A digital environment can significantly improve the academic / library experience.					
The University management should show leadership in the adoption of relevant technologies and innovation.					
Librarians in specialized ICT related roles can help to address user needs and expectations.					
The process involved in accessing electronic resources and digital services discourages student usage.					
The University library is lagging behind in the adoption of new technologies and innovations.					

**PART 3: Meeting User Needs**

7. With regard to integration of ICTs into library operations, how would you rate the quality of library services and facilities provided at the Jomo Kenyatta Memorial Library?

Satisfactory       Fair       Not Satisfactory

8. Give reasons for your answer in Q.7 above .....
- .....
- .....
- .....
- .....

9. What recommendations would you make to the Library management toward enhancing service delivery and improving user experience?
- .....
- .....
- .....
- .....
- .....

**THANK YOU FOR YOUR TIME AND CONTRIBUTION TO THIS STUDY**

## APPENDIX V: Work Plan

OUTLINE OF PROJECT ACTIVITIES						
		Selecting research topic, Proposal writing	Proposal defence	Field work, Collection of data	Data analysis, Interpretation & Presentation	Preparation & submission of final report
Apr	Wk.1					
	Wk.2					
	Wk.3					
	Wk.4					
May	Wk.5					
	Wk.6					
	Wk.7					
	Wk.8					
Jun	Wk.9					
	Wk.10					
	Wk.11					
	Wk.12					
Jul	Wk.13					
	Wk.14					
	Wk.15					

**APPENDIX VI: Budget Plan**

<b>NO</b>	<b>ITEMS</b>	<b>SPECIFICATIONS</b>	<b>QANTITY</b>	<b>UNIT COST</b>	<b>TOTAL</b>
1	Printing papers -Draft copies -Proposal -Questionnaires -Final copies	Quality A4	5 reams	500.00	2,500
2.	Stationary -Writing pad -pens	Quality A4	4 pads 4 pens	150.00 30.00	600 120
3.	Printer tonner (Black)		1	10,000	10,000
4.	Research assistant		1	1000	1,000
5.	Data Analysis		1	10,000	10,000
6.	Flash disk		1	3,000	3,000
	Internet Access & Communication			20,000	20,000
7.	Binding drafts Binding final copies	Spiral Binding Full Binding	10 Copies 7 Copies	100 400	1,000 2,800
8.	Editing				5,000
9.	Contingencies				10,000
<b>TOTAL</b>					<b>66,020</b>