ACCESS AND UTILIZATION OF DIGITAL INFORMATION SERVICES IN ACADEMIC LIBRARIES: THE CASE OF UNIVERSITY OF NAIROBI

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DECLARATION

This is my original work and has not been presented for an award of a degree in any other university.

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DEDICATION

I dedicate this work to my husband Alex for his support, our sons (Alvin, Abel Andrew and Albert), my loving mum, Florence my late father Wycliffe Okongo.

ABSTRACT

Academic libraries are critical contributors to knowledge generation which serves wide spectrum of the society. The fundamental role of academic library is to collect, process, and store, disseminate and utilize information to provide services to the user community. The use of digital resources has contributed to reshaping of information retrieval and access to practices in university libraries. In order to make use of the growing range of electronic resources users must acquire and practice the skills necessary to exploit the digital information. The aim of this study was to assess the extent of access and utilization of digital information services in academic libraries in Kenya with reference to University of Nairobi library. Objectives of the study were to assess access and utilization of digital information resources in the university of Nairobi library, establish the level of awareness of digital information services in the library, identify the challenges facing the library users in relation to access and utilization of digital information services in the library and suggest possible solutions to the identified problems in the library. This study used a descriptive survey design where the target population comprised of 96 postgraduate students of the University of Nairobi. The sampling technique applied to arrive at the target population was purposive sampling technique. Data were gathered and collected through the use of questionnaire for postgraduate students in the school of business. The findings revealed that majority of the respondents often used the library to access digital information resources mainly for writing class assignments. The study also showed that majority of the respondents rarely approached the librarians for assistance in the library and majority were unaware of digital information services. The study revealed major challenges faced when accessing and utilization of digital information as lack of adequate information skills, lack of awareness and training and poor information infrastructure. The following recommendations were made from the study in order to ensure successful utilization and accessibility of digital information services in academic libraries, the stakeholders should formulate strategic plan and ensure extensive training is offered to library users, policies which increase reliability of internet connectivity, use awareness of digital information services and through an effective marketing and promotion strategies enacted in libraries to enhance mobilization of more library users. Access and utilization of digital services is of vital essence to academic libraries if the research output it to be achieved and this project suggest what academic libraries could do to improve the services.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS AND ACRONYMS

CD-ROM: Compact Disk Read Only Memory

CAE: College of Architecture and Engineering

CARL: Canadian Association of Research Libraries

CHSS: College of Humanities and Social Sciences

CUE: Commission for University Education

DIS: Digital Information Services

DL: Digital Library

DLF: Digital Library Federation

DLMS: Digital Library Management Systems

E-Books: Electronic Books

E-Age: Electronic Age

E-Journals: Electronic Journals

E-Resources: Electronic Resources

FAQS: Frequently Asked Questions

ICTs: Information Communication and Technologies

IFLA: International Federation of Library Associations

IT: Information Technology

JKML: Jomo Kenyatta Memorial Library

KIRK: Kulliyyah Islamic Revealed Knowledge

KICT: Kulliyyah of Information Communication Technology

OPAC: Online Public Access Catalogue

OA: Open Access

SOB: School of Business

UoN;   University of Nairobi

WWW: World Wide Web

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter discusses the background information to the study, statement of the problem, aim and objectives of the study and research questions. Chapter also outlines the importance of the study, scope, limitations as well as the conceptual framework.

1.2 Background to the Study

Development of information technology (IT) and the popularization of network applications have made people nowadays obtain their required information and knowledge mainly by means of the internet. A digital library is an extensible knowledge network system under internet environments and a community service organization which can provide information and knowledge services for people and improve civil education for all-round development. Digital libraries have been emphasized by many countries and developed forcefully since the early 1990s. Responding to this kind of threat and challenge, many countries have begun to study and create advanced management models for digital libraries, and all these models try to make reference to the advantages of search engines and avoiding the inherent weakness of them, to realize digital libraries' culture and social value (Men-Xing, Chun-Xiao & Yong, 2010:31).

Exponential growth of information in the internet and related sources coupled with increased usage has led to the development of digital library systems that provide numerous services. Central to the systems is massive digitization, storage, access, knowledge mining, digital reference services, electronic information services, search co-ordination, management and access of archive materials (Sharma & Arora, 2005:42). Libraries have traditionally been part of the global information infrastructure an ideological and cultural force with far reaching implications in society. Over centuries libraries have collected, maintained, organized and provided access to information and knowledge resources that enable individuals, organizations and communities to achieve institutional goals and objectives. Libraries today continue to mobilize and provide access to local and global knowledge for social, political and economic development. In doing

so libraries act as gateways for information and tools for bridging the information divide within countries and between countries (Kavulya, 2007).

Academic libraries as fountains of knowledge provide services to support learning and research activities to the parent organizations. Academic library is attached to higher education institution which serves two complementary purposes - support the school's curriculum, and support the research of the university faculty and students. The mission is to provide quality information service and knowledge products (print and electronic) to resident community of scholars. The Canadian Association of Research Libraries (CARL) report revealed that, in the year 2000/2001 academic libraries subscribed to 436,731 electronic journals. The same report also states that librarians are leaders in using technology to transform traditional library resources and services to meet the challenges of the 21st century. Academic library is not static free - standing unit but ultimately its quality must be judged by the quality of outcomes of the institution. Academic libraries are part of the large academic institution. Generation, organization and dissemination of information and knowledge are subject to constant change since 1980s. Most academic libraries have the facility of internet resources which supplement the print collection of the library (Kulkarini, 2009:198). Continual evolvement of digital technologies and more importantly the ways in which these tools are being used to access, select, manipulate and produce resources has caused many librarians to rethink on the way forward. In focusing on the larger social and spatial context in which technologies are used to enhance the learning process, academic libraries are beginning to realise the possibilities of digital information services. In this respect, academic libraries have long stood unchallenged throughout the world as the primary source of recorded knowledge and historical records. Academic libraries in Kenya seem to be facing daunting challenges in regard to the primary role of delivering information to the users (Makori, 2009:10).

In the era of unprecedented technological innovation and evolving user expectations and information seeking behaviour, information perusals are arguably on the online society, with digital services increasingly common and increasingly preferred. As trusted

information provider, libraries are in advantageous position to respond, but this requires integrated strategic and enterprise architecture planning, for IT has evolved from support role to strategic role, providing the core management systems, communication networks and delivery channels of the modern library. Librarians use information communication technologies (ICTs) to perform functions such as cataloguing and classification, serials management, collection management circulation services among others in order to improve service delivery. In addition, IT components do not function in isolation from one another but are interdependent elements of distributed and multidimensional systems encompassing people, processes and technologies, which must consider social, economic, legal, organisational and economic requirements and relationships, as well as being logically sound from technical perspective (Buchanan, 2010:159).

Academic library is not just limited to material circulation, but should be viewed as useful channel for sharing knowledge, and powerful mechanism that can help personal improvement of studying performance. Most proposed personalized digital library systems have been focusing on personalized content representation or design of user interface. Studies pay less attention to the design of knowledge integration mechanism according to individual cognition or individual need in study. Consequently, to help users efficiently make use of various information and knowledge resources to enhance personal studying ability is considerable issue in developing personalized digital library. In addition, making use of the abundant digital resources in digital libraries to help users rapidly construct the knowledge structure is also important issue (Kao & Wu, 2012:493). Indeed most of the library functions are being outsourced in the digital environment that affects the future libraries which provide the link in the chain of social knowledge transfer where different kinds of systems take care of different functions. Though big libraries are indeed related to the permanent availability of documents, small and medium size libraries are nearer the functions of other private actors like booksellers, which are more concerned with short- and medium-term access to documents (Garcia-Marco, 2011:116).

In order to make use of the growing range of electronic resources, students must acquire and practice skills necessary to exploit these resources. Skill learning is essential in the

technology driven environment but enhanced tremendously through the use of innovative learning strategies (Okello-Obura & Magara 2008: 15). The same authors suggests that the skills required in accessing the maximum potential of digital information services are much greater than those required for searching printed sources. Harun (2006:5) investigated the use, perceived usefulness and satisfaction with electronic resources among the Kulliyyah Islamic Revealed Knowledge (KIRK) and Kulliyyah of Information and Communication Technology (KICT) postgraduate students. The findings of the research showed that Online Public Access Catalogue (OPAC) was the most regularly used among e- resources provided by the ILLUM library. Nlyidizi (2005) suggests that most students come from rural environment with poor learning facilities that do not include library as an integral part of learning. This indicates that the students have not been exposed to information technologies and information sources. This partly provides the explanation why some students do not use the e–resources in the library. Tella (2007) argues that the library users' ability to find and retrieve information effectively is transferable skill useful for future life in addition to enabling positive and successful use of the electronic resources while at the university.

Matusiak (2012) asserts that, the library users especially students do not perceive academic libraries as useful source of digital images and therefore use search engines when searching for visual resources. This shows that efforts are made to improve services although some users do not see libraries as suitable ventures for disseminating electronic services. The findings also revealed that students spend less time to utilize the digital library resources and this has made some students have less knowledge about some of the resources that are available in the digital contents in the library. Several studies have shown that digital information services have several advantages. Researchers carried out by Lwoga (20011), Makori (2012:31) were conducted on the advantages of digital libraries. These advantages make the creation of digital libraries strategic method to enhance information access in the Sub-Saharan region. Digital information can easily be shared and therefore made available to everybody, which is great improvement on print libraries, that requires expensive duplication of material in different locations. In addition digital libraries provide faster method of accessing, utilizing and exchanging information

in all sectors such as research, scholarship, medicine, government services and business. Digital information services are available on 24/7 basis from anywhere in the world, offering flexible arrangements for students, researchers, scholars and the community. The reviewed literature has indicated that there is very little research that has been done on access and utilization of digital information services in academic libraries in institutions of higher learning more so postgraduate students.

1.2.1 University of Nairobi Library

Kenya higher education has grown tremendously from 1903 to present. The Commission for University Education (CUE) was established by an Act of Parliament, University Act No. 42 of 2012. The mandate of CUE is to promote the objectives of university education by regulating and accrediting universities and programmes, among other functions. University education involves both public and private institutions of higher learning. Public universities are sponsored by the tax payers' money and include University of Nairobi, Moi University, Kenyatta University among others. Private universities are mainly sponsored by individual initiatives, private organizations and include Strathmore, United States international University (USIU), Multimedia University among others

University of Nairobi library system is composed of the main library, Jomo Kenyatta Memorial Library (JKML) and fourteen branch libraries across the country. JKML caters for both College of Humanities and Social Sciences (CHSS) and College of Architecture and Engineering (CAE) in the main campus. University of Nairobi digital libraries play active roles in dissemination of information to the university community and beyond. In addition, the digital libraries offer wide range of facilities in support of both traditional services and modern technologies applications in research. Information services provided include lending, inter-loaning (with other institutions) and accessing electronic resources. Currently, the library provides access to over 750,000 volumes of print resources subscription to over 76,000 peer reviewed full text electronic journals in all disciplines and over 163,000 electronic books. In addition, there is the document delivery service that orders articles that are not available in full text from the database from the British library and makes accessible to the users upon request.

Information services provided include general lending, reference materials as well as specialized research materials. The library system has rich and unique information resources in form of special collections including the East Africana, that has collection on East Africa in general and Kenya in particular. The collection is enriched by the higher degree theses and dissertations of the University of Nairobi as well as relevant ones submitted elsewhere. In addition, the library has established University of Nairobi digital repository to capture, preserve and disseminate the intellectual output of university. The depository manages scholarly academic and research materials created by the university community.

The library joined the university community in celebrating the excellent performance of the university in the just released ranking web of universities where 22,000 Universities were ranked worldwide and where the University of Nairobi emerged No. 1 in Kenya and No. 9 in Africa. In the latest web ranking the University of Nairobi digital repository was ranked the best in Kenya and No. 7 in Africa. Additionally the university has continuously promoted the Open Access (OA) initiative by depositing its research outputs into the digital repository and the library is committed to enhancing the digital repository as the tool to increase the visibility and impact of the university's research output.(htpp//uonlibrary accessed on 14-08-2014)

1.3 Statement of the Research Problem
In today's global economy, successful societies are those that develop, disseminate and apply knowledge and adapt flexibility to ever more rapidly changing circumstances. Higher educational institutions have to be at the centre of these changes where institutions libraries are transforming rapidly to meet the demands of the electronic age (e-age).Academic libraries in Africa do not enjoy the same information delivery methods like those in developed countries except those in Southern Africa. Chisenga and Rorissa (2001:6) point out the great disparity in the access, adoption and use of ICTs in academic libraries they provide users with access to a wide range of digital information services. Waiganjo (2006) states that academic libraries in Kenya suffer poor funding, poor communication system and lack of ICT qualified librarians. Magara (2002:241) in

Uganda pointed out that power unreliability, management attitude and poor ICT skills of the librarians. Rosenberg (2005) identifies the challenges to access and use of digital services to lack of library software standardization. In addition, information professionals should have a clear understanding on help-seeking clients as not many studies have been conducted to examine users' awareness and preferences (Ramos & Abrigo, 2012:11).

The new trend in the use of technology is the adoption of digital information resources in academic libraries. Information and communication technologies have revolutionized the concept of academic libraries. Empirical studies indicate that libraries are gradually getting digitized with comprehensive and free scholarly resources than those that some websites could provide Fundamentally it is remarkable to point out the significant investment made by the University of Nairobi management for providing digital information services and other technologies to ensure that users have access to information and other related services. The university library plays an important role in the collection, acquisition storage organization and dissemination of information. Library users in universities who need to do research will benefit from combination of digitally delivered content with learning support services, choices, opportunities and enhanced flexibility that digital library and information systems provides. It has been observed that most academic libraries in both public and private universities in Kenya still grapple with manual library operation methods. Academic library clientele are least oriented on access, adoption and usage of digital services in the libraries. Consequently, users show dissatisfaction and complain of poor information service delivery by the academic librarians. This study therefore sets out to investigate the factors inhibiting access and utilization of digital information services in academic libraries in Kenya with special reference to University of Nairobi.

1.4 Purpose of the Study

The aim of this study is to assess the extent of access and utilization of digital information services in academic libraries in Kenya with particular reference to the University of Nairobi

1.4.1   Objective of the Study

The study was guided by the following objectives to

1. Assess access and utilization of digital information resources in the Nairobi library

2. Establish the level of the user awareness of digital information services in library

3. Identify the challenges facing the users in relation to access and utilization of digital information services in library

4. Suggest possible solutions or strategies to the identified problems in the library.

1.5   Research Questions

The study was guided by the following questions:

1. What is the extent of access and utilization of digital information services in University of Nairobi library?

2. What is the user's level of awareness of the existence, preference towards digital information services in University of Nairobi library?

3. What are the challenges facing the information users in relation to access and utilization of digital information services in University of Nairobi library?

4. What are the possible solutions or strategies to enhance utilization of digital information services in the library?

5. What are the benefits of access and utilization of digital information services in University of Nairobi library?

1.6   Significance of the Study

Information professionals and library users will benefit from this study by having knowledge on the anticipated benefits of digital information services and have insight into the impediment of accessing electronic services within the library and on remote accessing. The study enables both policy makers and management of the University of Nairobi and institutions of higher learning to improve or enhance current level of achievement of digital information for better and efficient services in the future.

The library management of University of Nairobi is able to determine the benefits visa-a - vis the challenges of digital information services, and therefore device mechanisms for

tackling the use of access and challenges of digital information services (dis) in the university libraries. This study is important in laying the foundation in research of digital information services and resources in libraries of developing countries. The stakeholders and policy makers in the education sector will be informed on how to formulate budget allocation for the university libraries.

1.7 Assumptions of the Study

The following assumptions of the study were made;

1. All respondents are aware of the digital information services at the University of Nairobi library.
2. All respondents would be cooperative and answer the questionnaire

1.8 Scope of the Study

The study mainly concerned itself with access and utilization of digital information services in the University of Nairobi Library Nairobi, Kenya

1.9 Limitations of the Study

The study limited only the post graduate students of the school of business. There are many schools in the University of Nairobi but school of Business Post Graduate students was chosen considering the fact that it is among the largest school in the University of Nairobi so the population was a large enough to provide a representative sample. Time constraint was another reason why school of Business was selected as the researcher was working during the day hence had difficulty in balancing the time.

Another limitation was not all questionnaires were returned as some of the respondents cited busy working schedules. At the time of data collection the University was preparing for the 52 graduation ceremony hence getting the respondents proved an uphill exercise. Funds were also a limiting factor based on the fact the researcher is self-sponsored.

1.10 Operational Definition of Terms and Concepts

Academic Libraries

These are libraries in educational establishments at any level universities, colleges and research associations

Access

Information retrieval a device or method whereby a document may be found, permission and opportunity to use a document, or the approach to any means of storing information e.g. index, bibliography, catalogue and computer terminal.

Digital Information

Content from any source and in any format that has been transferred into digital the format for loading onto electronic source of information. These are electronic resources available to the library user

Digital Library

Organized and focused collection of digital objects, including text, images, video and audio, with the methods of access, and retrieval and for the selection creation, organization maintenance and sharing of collection. Digital libraries provide selected information resources in a structured digital format. They make them accessible or retrievable by a defined community or a set of community user.

Electronic Resources

Materials consisting of data or computer program encoded for reading and manipulation by the computer by use of the peripheral device directly connected to the computer, through the internet. This category includes software applications electronic texts and bibliographic databases.

Digital Reference Services

Reference services, web-based reference services and electronic reference service are used interchangeably as terms with similar meaning.

1.11 Summary

This chapter sets out the framework for the research. It gives an introduction and background to the study. It outlines academic libraries and the characteristics of access and utilization of digital information services. The statement of the problem is stated, the aim, objectives and research questions of the study are also stated. The significance of the study is explained and assumptions are given related to the study and finally, operational definition of terms and concepts of digital information services are defined.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature based on the following issues; digital Information resources and services in academic libraries, rationale of digital- based information resources and finally the challenges encountered in the provision of digital information services in academic libraries.

2.2 Digital Library and Information Systems

The domain of the digital library represents many interest groups and disciplines such as, data management, information retrieval, library science, document management, information systems, web, image processing, artificial intelligence, human computer interaction and digital conservation groups. The three areas of interest identified include librarianship, computing research/e-business and social drivers. These interests or backgrounds influence the conception of the digital library although different people have different, conceptions, approaches and visualisation of the innovation. Anunobi (2011:373) viewed the digital library as the provision of library and information services for users. Development of the digital library is also influenced by the mission statement of the organisation including its collection, preservation, access and economic functions.

Every digital library is permeated with complex and multi-dimensional structures, patterns and relationships. Some of this complexity is explicitly encoded through descriptive metadata semantic markup, and hyperlinks. But much remains implicit accessible, latent or hidden in the collection. To make implicit accessible and useful, digital libraries generate explicit, higher level representations. (Fast and Sedig, 2010: 170).The attributes of the digital library that guides its development is composed of three systems – digital library (DL), digital library system (DLS) and digital library management system (DLMS).(Chowdhuruy,2010:209) This manifesto brought together various views and characteristics/attributes of the digital library (Anunobi, 2011:378). In the development of digital technologies, digital resources have become more popular and important to university teachers and students who are the library users. Most of, the users

may think that the digital library is just the shortcut to accessing online databases, only few of users would like to utilize the services and information in digital library. In the face of competition from commercial search engines, digital libraries should take some action to engage the users' attention. In the internet world, the most popular though not the best provides all types of information. In particular a merit system has been developed and implemented to increase the user viscosity with the digital library of a university (Yang, 2012: 184).

Digital libraries are organizations that provide the resources including specialised staff to select, structure, offer intellectual access to interpret, distribute, preserve the integrity of and ensure the persistence over time of collections of digital works that are readily and economically available for use by the defined community or set of communities (Fox, 2011: 13). Though the focus of this concept is on the document collection, it stresses the fact that digital libraries are much more than random assembly of digital objects. Digital libraries retain the several qualities of traditional libraries such as defined community of users, the possibility of selecting, organizing, preserving and sharing resources (Adzabu, 2014:39). The information system offers users the prospect of access to electronic resources at their convenience temporally and spatially. Users do not have to be concerned with the physical library's hours of operation, and don't have to go physically to the library to access resources (McMenemy, 2012: 510).

Digital library is the concept of remote access to the contents and services of libraries and other information resources, combining on- site collection of current heavily used materials in both print and electronic forms, with an electronic network that provides access to, and delivery from external worldwide library, commercial information and knowledge source (Aunobi & Ezeani, 2011).The system must not be seen as merely digitized collection of information objects plus related management tools, rather electronic environment bringing together collections, services and people to support the full cycle of creation, dissemination, use and preservation of data, information and knowledge. A number of intermediate goals are formulated for academic libraries to support teaching, learning and research. Academic libraries provide a wide range of array of services to assist members of the library with organizing collections of materials or

making them more widely available. These services are as follows; catalogue databases current awareness bulletins, externally purchased databases, and remote information services, internally published newsletters report and journals, among others Wu, 2012).

2.2.1 Rationale for Digital Information Systems

The digital revolution has brought dramatic changes to information storage, access and retrieving processes. The creation of digital libraries has made essential impact on teaching and learning process. Digital information services facilitate information services for library users, independent of time and place. This is much needed especially if active learning styles become the common place (Anunobi & Ezeani, 2011:382).

Major benefits of digital information services include storing resources in digital forms, which allows online access to library users at numerous locations at anytime and anywhere, at home, in class, and laboratories, among others. Digital information services provide various search techniques to access the digitized resources (Matusiak, 2012:138). Digital information services containing representations of original works provide opportunities for students and scholars to conduct research from their personal computers and workstations wherever users are.

Sharma and Arora (2005:43) assert that the digital library has the open architecture built on a collection of distributed information repositories where information is stored in multiple formats which contains both metadata and data. These multiple formats offer numerous advantages such as makes the library collection for global use; saves the users 'time; solves the space problem; facilitates the function of the library; precludes the problem of theft, defacing, tearing of pages and binding of library documents which are universal; increases the life of the documents and also provides the latest and accurate information.

Today's information environment is hybrid. This has been occasioned by the desire of library users to have access to unprecedented amounts of information in varying formats. Information has become a critical factor in our time. Globalization has impacted on legal education, research literature, practice and legal information management (John-Okeke,

2008). Today's web-based information services include personal web pages developing into blogs, encyclopaedia developing into wikis, text-based tutorials, email customer support infrastructures into information services (O'Reilly, 2006). The web provides a unified access point to all library digital resources such as local and remote electronic resources, web Online Public Access Catalogues (OPACs) and bibliographic databases. Law students and researchers are aware of the numerous benefits of utilizing online legal information. As along as the core mission of libraries remains information services, all efforts should be made to provide the right kind of information to the right users. Librarians are aware of the dangers of using the internet. They advise on suitable authentic databases for particular types of information; and steering people away from internet sites of doubtful origin in favour of trusted and authoritative sources (Doe, 2006).

Libraries are undergoing many changes due to ICT and digital revolution. Academic libraries have to provide information to users' desktop instantly irrespective of place, time and format. The massive development of ICT has changed the role of library and information centres. Information resources and systems are being made available in various formats such as portable document format (PDF), Hyper Text Mark-up Language (HTML), image audio and video. In this changing world librarians and academic libraries should have a major role in managing these digital information resources and systems (Dhanavandan, 2011: 68) Information communication technology has made it possible to provide and make information more accessible than it used to be. Electronic sources are available 24 hours, wider access has been achieved by the centralization of information. The user can conveniently access these resources remotely and does not have to physically travel to the library. Digital information resources are sharable. Shared responsibility brings cost to a low level. A lot of collaborations are needed in the acquisitions of electronic information. Most libraries have entered into consortium. Moreover a lot of useful and authentic websites offer free online resources for example East African Legal Information Institute (EALII) (John-Okeke, 2008).

2.3 Digital Information Services

Modern libraries have evolved from centralised, paper-based systems into distributed networks of digital and non-digital materials, providing innovative library services as well as traditional services. With the dramatic increase of available materials and user expectations, libraries are forced to exploit new technology to fulfil own missions with relatively limited resources. Intelligent agent technology, rapidly developing research area, has the potential for libraries (Liu, 2011). The volume of digital materials and information sources are getting larger and larger, and the systems have to move from being passive (with little personalization for users) to being proactive (with customized information for individual users). In particular, the personalization helps satisfy the needs of individuals by understanding client preference, gradually becoming one of the important ways to improve the service quality of DLs (Kao & Wu, 2012:510).

Digital services are considered as services or resources accessed and/or provided through digital transaction. Services range from the relatively straightforward, such as provision of online tools, virtual space for collaboration and sharing of content to online reference services, and more complex distributed and interactive systems as digitized local archive collections purposefully linked to the local school curriculum through virtual learning environments. In the role of access provider, the digital library also establishes links to other public information providers for sharing societal goals such as lifelong learning and health and wellbeing, across education, health and the arts. (Buchanan & McMenemy, 2010:42).

Digital reference service is characterized by communication in one direction of time typically by e-mail or web forms. It involves the use of frequently asked questions (FAQS), e-resources which are comprised of subject guides, lists journals and other content and e-mail which may be form – based or address – oriented. Digital reference services refer to the network of expertise, intermediation and resources put at the disposal of the user seeking answers in online or networked digital information service. The system has unique challenges and opportunities because of many diverse requirements involving collaborative support, rapid access, highly interactive interfaces, digital document imaging, distributed database management, hypertext information retrieval,

enforcement of intellectual property rights, integration of multimedia information services, management of multilingual collection, information mining, electronic reference service, electronic document delivery and selective dissemination of information. As a result deployment of DIS requires integration of several information technologies (Radford, 2006).

IFLA (2005) noted that DIS provide access to a very large information collection(s); support multimedia content and support search and retrieval and provide user friendly interfaces among others. Makori (2009) observes that, there has been increased professional speculation and debate about the end of the library as the physical ''place'' because of digital and web based information. Establishing and developing relationships with users is imperative if academic libraries and information professionals are to meet the needs of the millennial generation. Libraries have to improve facility accommodations with group study space and incorporate social software such as IM, blogs, online chat, and Wikis into library instruction and reference services. Academic libraries in Kenya will continue to adopt innovative approaches to manage information. Additionally, the libraries need to adopt the business-like approach to market their information products and services. This requires constant monitoring and evaluation of trends facing the information environment. Generally, libraries should not only be seen as dealing with books but also provides one stop shopping center that utilizes appropriate technology to provide array of information products and services.

Digital information services among them E-books are commonly perceived as offering great potential for teaching and learning (Armstrong et al, 2006), they are attractive to scholarly communities (Nicholas et al, 2007) and have "greater potential to change the information landscape than journals" (Rowlands et al, 2007: 489). Indeed, the digital format offers many opportunities for books to be developed as interactive learning resources and in some cases substituting for locally designed learning resources and experience. Many academic libraries are only in a position to make a limited list of e-books available and are highly dependent on publishers decisions.

With modern networking technology and the internet, today's academic libraries have extended their own specific information resources services and teaching activities outside the library buildings. Academic libraries utilizes a virtual private network (NPN) to provide faculty, instructors, students, and staff with access to the university library's databases and other information resources. VPN provide users with secure remote access to restricted information resources via the internet off campus. Wireless Access in Academic Library technologies are being widely applied to diverse academic library settings. Digital libraries should enable any citizen to access all human knowledge anytime and anywhere in a friendly, multi-model, efficient and effective way by overcoming barriers of distance, language and culture and by using multiple internets connected devices (Sukula, 2013).

2.4 Challenges of Digital Information Services

Digital library services are designed for the library's patrons as well as for professional staff on the needs and capacities to supply information content and systems, including various challenges (Bakeri, 2012). Perhaps greater reward accrues from recent efforts to define which of the systems is necessary to support digital libraries and need to be developed and maintained by the library. Infrastructural services required by the digital library but more effectively mounted on institutional, or even cross-institutional level are needed. In the commercial world, high tech utility services are the staff of business to business sector: Encouraging a similar developmental trajectory for digital library services that are commonly required but beyond the capacity of any single library organization to supply would require libraries to articulate requirements and aggregate demand for such services in order to create incentives for third party suppliers to move in and supply the market (Sekarani, 2006).

Digital libraries demand cutting edge in IT and communication infrastructure such as, optical fibre and networks with required number of workstations capable of providing online information services. Computing and multimedia applications as well as internet connectivity with sufficient bandwidth are also important, as they are capable of meeting informational and computational requirement of the user community (Haliso, 2007). There are many more related facilities and services that are highly essential in ideal

digital library environment. Chisenge (2006) observes that, ICT infrastructure in most of the institutions and organizations are not up to the desired level so as to run advanced digital library services to the optimum level. Koehn and Hawamdeh (2010) argue that there are cultural issues at play also as the "increasing quantity of born-digital material and the growing preference of users for digital information access are forcing libraries to rethink the strategy in managing financial resources and serving the greater community" he stated. Further, Koehn and Hawamdeh in a research conducted involving telephone interviews with just under 4,000 members of the public concluded that "the Internet was overwhelmingly preferred over the library for the majority of users, many of which fall under the library's traditional mission of information provision".

In most libraries paper based documents outnumber the electronic subscriptions and acquisitions. Some of the libraries need retro conversion and digitization of the library holdings too. Several studies show that there is severe lapse on the libraries with regard to proper planning of information resources that are conducive for developing digital libraries (Lui, 2011; Kao & Wu, 2012; Chowdhury, 2010; & Matusiak 2012). Electronic information resources penetrate libraries in multiplicity of complex formats and with different access terms and conditions. These information resources are scattered and distributed across a wide variety of publications.

Major administrative challenge is in complying with the copyright and intellectual property rights issues. The library authorities have to discuss seriously with publishers on this aspect in order to involve some mechanism of profit to users, publishers and authors. Users may be charged for each access, downloading from severs, or each kind of digital library collection and this causes the challenge to the user due to cost demands. Security aspects are the most pressing challenge of digital information service. Piracy of database, vital invasion and parallel satellite networking stress are some of the issues academic libraries are confronted as a way of routine. Additionally, lack of expertise, not too many vendors is available in the country and abroad as well. Overseas vendors charge exorbitantly and are reluctant to import techniques or technology (Liu & Lou, 2011).

Digital libraries are multimedia products incorporating structured text, sound graphics, pictures, photographs and video clips which require intensive use of bandwidth. Developing countries as such have restrictions of bandwidth problems that hinder access utilization of digital information services. Moreover increased use of network for transferring data by more people increases the load on the network traffic. This is further compounded by the size transferred if it includes full-text multimedia document. Indeed, simple text takes up only small amount of space, picture and graphics take up more; video and sound files are really space - hungry demanding much more space and transmission time (Anunobi & Ezeani, 2011:307). Digital library services vary, for example, interactive mode between library and user, or mutually beneficial mode of resources-services or personalised service mode based upon subjects/individual demands. All these would not be realised without systematic co-operation involving resources, services, organisations and librarians. Funding human resource management and technology development as well contribute to the digital library system (Xiao, 2010:306).

Digital technologies present preservation solution for the documents in libraries with increase access to digitized documents over the electronic networks. Technological and associated internet and web technologies are in continuous flux of change. New standards and protocols are being defined on regular basis for file formats, compression techniques, hardware components, network interface storage and devices (Tzoc & Millard, 2011:12).The digital library services face constant threat of "techno obsolescence" and transitory standards. Magnetic and optical discs as physical media are re-engineered to store more and more data. There is constant threat to backward compatibility for products that were used in the past. Digital images have to be constantly migrated and converted to new formats computing devices, storage media and software to ensure that valuable digital objects are not left behind in obsolete system which eventually breaks down rendering data inaccessible. The initial conversion of printed-text into digital objects is not only expensive but also necessitates diversion of manpower and resources into constant re- invention of wheels in terms of migration (Chowdhury, 2010).

Financial institutions repository infrastructure needs comprehensive policies in place so that uniformity and cooperation can be ensured among all education providers. Some academic institutions have adequate funding whereas privately-owned and partially-funded institutions are lagging behind in embracing new technologies for institutional development and suffers lack of resources. Existing infrastructure for higher institutions necessitates a robust and open information policy that maximizes the use of educational resources to promote open scholarship (Lyngar, 2008). Funding is necessary to run electronic information services.

Technical knowledge on the digital elements of electronic documents is largely lacking. Lack of digital preservation knowledge is a challenge that libraries have to grapple with as they try to preserve their scholarship in this digital age. It is well known there is limited knowhow on equipment and software required for preservation of digital information amongst libraries and institutions (Malizia, Bottoni and Levialdi, 2010). Digital technology poses several challenges, because it comes in different formats both hardware and software. Therefore libraries need not only plan and budget for costs of the costs of actual hardware and software but also training human resources. There is the cost of maintaining international standards of digital formats which is an expensive exercise as it is based on paying for upgrades. Increasingly libraries are using open source software especially digitizing their own institutional knowledge research output. However, even if the actual software is open source and therefore presumed to be free" there are costs that libraries have to incur especially training (Kanyego, 2009: 36).

2.5 Empirical Studies

Several digital information usage studies in recent years have focused on standardized usage counts. Yetis (2005) points out that the fundamental outcome of the introduction of digital technology within libraries is the fascinating possibility of systematic organization and storage of information in large-scale databases. Conventional methods of collecting and presenting information have become more expensive and time-consuming whereby placing digital information on networks is regarded as a major advance over the physical maintenance of some library services.

Zheng (2008) conducted a survey that showed the factors affecting teachers making full use of digital information resources are complex such as method of use and cognition unfamiliarity with computer and networks, and lack of ability. In addition many did not know what the library actually buys, while some older ones assume and think that the age factor is hindrance to use digital information services and resources. When such users need digital sources then graduate students are used to search and help them. Chowdhury and Chowdhury (2003) suggest that usability is a relative concept and must be judged on the basis of a digital library's intended goals emphasizing the importance of cultural issues the usability of information services. Bertot (2004) identifies four evaluation strategies to assess use and access of digital libraries; output assessment; which involves identification of the number of activities that patrons engage, such as the number of databases used to determine the usage of resources and services. Performance measures, which evaluate the specific resources or services in terms of efficiency and effectiveness, such as the cost per item downloaded. Service quality determines the overall quality of resources and services to meet the quality standard and outcomes assessment, determines the effects on patrons in terms of their benefits.

Parida (2010: 202) emphasized the significance of digital libraries in the present information era and described their substructure and technological requirements like hardware, software, electronic resources and different types of reference services. The author further gave a brief overview of hardware requirements for developing a state of art digital library. It also described the core elements of how libraries should design and develop the library system in order to satisfy the library systems in order to satisfy the users of the twenty first century. Digitization of information requires knowledge of intellectual property rights, especially copyright. This is especially important if the information is going to be utilized in an academic environment. An academic environment itself entails that knowledge in whatever form is at the centre of every activity. The author acknowledged ignorance about the prevalence of plagiarism at universities in South Africa.

2.6 Conceptual Framework

Conceptual framework is the hypothesized model identifying the concepts in the study including the relationship. Digital library system, becomes more firmly embedded and assumes greater significance for information policies and strategies, so does the higher level of framework to organize the understanding of these development become more pressing. The concept including independent variable (access and utilization of digital information services), dependent variables (economic issues, administration policy, technological obsolescence, expertise) and outcome variables (access management, usage & monitoring, Networking of interoperation, Digital presentation, content delivery, Competent staff)

Figure 1.1 therefore aids to visualize the relationship between key concepts and variables that are relevant to this study. The diagram illustrates that within the particular context, given challenge occurs.

Independent Variables

Access & Utilization of Digital Information Services

- Economic Issues
- Administration Policy
- Technological Obsolescence
- Expertise

Dependent Variables

- Infrastructure
- Licensing
- Copyright

Intervening Variables

Dl Services
- Access Management
- Usage & Monitoring
- Networking of Interoperation
- Digital Presentation
- Content Delivery
- Competent Staff

Outcome

Figure 2.1: Digital Information Services

The above conceptual framework strives to explain relationship between variables namely, independent, dependent and intervening variables and the expected outcome from this process. In addition, it clearly shows how these variables are interlinked and

controlled to produce the expected research outcome. The intervening variable is also synonymous with mediating variable.

The dependent variables such as economic, technological status and administrative may hinder the expected outcome which is information access, information usage and distribution. Intervening variables explain the relation or provide causal link between the other variables that is independent and dependent variables. In this case the availability of digital information services as digital texts and images does not necessarily guarantee smooth accessibility of these digital objects and texts once they have been acquired by the available funds or resources.

2.7 Summary

This chapter reviewed some of the existing literature on digital information services in academic libraries. The researcher reviewed literature on what digital library and information systems are composed of and their relevance to academic libraries, the rationale for digital information services and the various types of digital information services offered in academic libraries. The researcher concluded with a conceptual framework which showed the independent variable, dependent variables and intervening variables. The outcome of these variables was indicated as the digital library services offered in Academic libraries.

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focuses on the procedure that was used to carry out the study. Issues herein include research design, location, target population, sample and sampling procedures, data collection instruments and data analysis. Ethical issues are also discussed accordingly.

3.2 Research Design

This study used a descriptive design which is used in preliminary and exploratory studies that allow researchers to gather information summarize present and interpret for the purpose of clarification. Descriptive design was selected as the design enabled the researcher to construct questions that help solicit the desired information, identify the means by which the research was conducted and data was summarized in a way that provided the designed descriptive information.

3.3 Area Study

The location of this study was Jomo Kenyatta Memorial Library of the University of Nairobi situated in the main campus and Lower Kabete library in Nairobi County, Kenya. JKML was chosen as an ideal site since of its centrality and it was observed most postgraduate students frequent the library hence a central place to target the respondents

3.4 Target Population

Population is defined as the entire group of individuals' events or objects having common observable characteristics (Saunders, Lewis & Thorbill, 2009). The target population for this study involved 96 postgraduate students of the school of business (SOB). School of business was purposively selected as it is among the largest schools in the University of Nairobi. Empirically it has been observed that there is also frequent usage of the library by postgraduate students from the school of business. The population of postgraduate students from School of Business was large enough for a sample to be drawn from as the population was not too large or too small hence able to provide a representative sample for the total population of postgraduate students in the University of Nairobi. Literature

reviewed showed that no study had been carried out in school of business on access and utilization of DIS.

3.5 Sample and Sampling Technique

Sampling is the procedure a researcher uses to gather people, places or things to study. It is a process of selecting a number of individuals or objects from a population such that the selected group contains elements of the characteristics found in the entire group (Orodho and Kombo, 2002). A sample is a finite part of statistical population whose properties are studied to gain information about the whole. When dealing with people, it can be defined as asset of respondents (people) selected from a larger population for the purpose of survey.

3.5.1 Sample Size

The sample size was calculated using slovin's formula. If a sample is taken from a population, a formula must be used to take into account confidence levels and margins of error. When taking statistical samples, sometimes a lot is known about a population, sometimes a little and sometimes nothing at all. According to Ariola (2006) slovin's formula is used when nothing about the behaviour of a population is known at all.

Slovin's formula is written as:

$$n = N / (1 + Ne^2)$$

n = sample
N = Total population
e = Error tolerance

Ariola (2006) further argues that in using the formula, the error of tolerance is first determined which can a percentage of between 90 and 99 for example a confidence level of 90 percent (gives a margin error of 0.1 and 98 percent confidence level (a margin of error of 0.02). In the current study a confidence level of 90 was utilized thus the margin of was error of 0.1

The total population of the entire students is 2278, thus applying the formula; the sample size was;

$$n= 2278/ (1+2278*0.1*0.1) =96$$

In total 96 respondents (postgraduate students) were utilized in the study

3.5.2 Sampling Technique

In this sample method, the researcher purposely targets a group of people believed to be reliable for the study. In this study the School of Business was purposively selected because of its relatively high concentration of postgraduate students who regularly visit +libraries at the main campus. Additionally, the postgraduate students attended lectures at the main campus and its environs and would therefore be accessible for the required sample size for the study. Simple random sampling was used to select the individual respondents hence yielded research data that can be generalised to a larger population.

3.6 Data Collection Methods

3.6.1 Questionnaire

Questionnaires were administered to postgraduate students in the school of business. The questionnaire was divided into two sections; the first section was aimed at gathering the demographic information of the respondents. The second section addressed various themes in the background and objectives of the study. Questionnaire tends to be more objective and detailed in data collection process. Questionnaire were directly given to the respondents who were given time by the researcher. Others were collected after filling immediately and others were to be collected later at the office in the school of business

The main instrument for collecting data for the study was the questionnaire that helped to collect accurate and reliable descriptive information from the respondents. The questions were designed to address specific objectives of the study and constructed using simple words to avoid confusing the respondents. The study used both closed and open ended questions. Closed questions gave the respondent a set of choice or options while open ended questions are free type of questions that permitted greater depth of response and gave the respondent an opportunity to give insight into their feeling about DIS.

The questionnaire helped in saving time since information was collected from large number of respondents within the short time. In some cases respondents were approached while in lecture halls and hence helped to capture large number of respondents at once. Confidentiality was upheld and this motivated the respondents to give the information being sought without bias. The disadvantages of questionnaires is that the response rate

can be quiet low and in this case the data collection was carried out when the respondents were preparing for the 51st graduation ceremony in august 2014 graduation which was a big challenge. Some questionnaires were incomplete while others returned unanswered with no direct contact information.

3.7 Research Instruments

Research instruments are used by researchers and practitioners to help in the assessment or evaluation of clients. The measurement tools include scales, indexes, surveys and questionnaires. The validity and reliability of a research project depends on the type of research instrument chosen. The researcher ensured the instruments chosen for the study would yield the desired results. The study used a combination of data collecting instruments. The main tool for this study was a questionnaire for postgraduate students in school of business. The questionnaire was divided into two sections; the first section was aimed at gathering the background information of the respondents while the second section consisted of items that address the research questions.

3.7.1 Pilot Study

In this study the pilot study was conducted so as to assess the validity and reliability of the data collection methods. In the pre-testing stage the researcher was able to familiarize and assess issues that might affect the data collection process such as flow of questions, level of difficulties, and interpretation among others. To ensure the questionnaires are tested freely, a pretest was done. The area of study was Kenya Methodist University situated in Nairobi. The population for the pretest was identified using random sampling where a total number of 20 library post graduate students who were randomly selected from the library. Out of the 20 postgraduate students selected for the pilot only 15 responded while the rest did not answer the questionnaire. The results were analyzed using both quantitative and qualitative tools of analyses. Results of pilot study found that there was need for refinement modification and revision of the questions. The researcher was able to reformat the research instrument, remove redundancies from the question so as to ensure easy understanding, organization and smooth flow of the study.

3.7.2 Validity

Validity of research instrument is the degree of accuracy and meaningfulness of inference based on the study results (Orodho, 2005). Validity is the degree to which results obtained from the analysis of data represent the phenomenon under investigation. The researcher used valid data collection instrument that is questionnaire that contained relevant information to the study. Pre testing was conducted and the responses to the research questions helped the researcher identify items characterized by difficulties and ambiguity. These were corrected hence the quality of research instrument improved. Integrity of the data was adhered to through the quality control in research that ensures highest possible level of data integrity together with findings that are totally relevant to the project objectives and are actionable.

3.7.3 Reliability

Reliability is the consistency of measurement over time that provides the same results on repeated trails. To obtain this a pilot study was undertaken and data collected was used to compute the reliability. The questionnaire had closed and open ended questions to ensure that the respondents gave comprehensive answers to the questions. Data coding was done and analyzed by research assistant that are knowledgeable with the topic of research. None response were assigned an input code to ensure reliability.

3.7.4 Ethical Considerations

Letter of introduction in Appendix I provided the formal consent for the study in the selected school. The principle of voluntary participation was strictly adhered to and the respondents were not coerced into participation in the research as they were requested by the researcher to grant their acceptance to respond. Participants were informed the purpose of the study was purely academic and assured of confidentiality (Appendix I). Pilot study was based on voluntary participation from the respondents. References made in the study were well acknowledged to avoid plagiarism.

3.8 Data Analysis and Presentation

Descriptive analysis was used to discuss the findings in relation to research questions and objectives of the study. After the research data collected data was edited to ensure

adherence of the data collection protocol and avoid actions that would lead to missing and questionable data. The data was converted to a form that permitted efficient and accurate statistical analysis. The researcher developed a code book that explained what each question was and values associated with each question, what numerical value represent and each of the value assigned to it. Both Statistical Package for Social Sciences (SPSS) software and manual data analysis was used to manage, analyze and display the data. The analyzed data was presented in forms of tables, graphs and charts and percentages. The analysis and interpretation of data was done addressing the purpose of the study.

3.9 Data Collection Procedures

Questionnaires were distributed using different approaches within the month of August and September 2014. Respondents were issued with the questionnaire while using the library through direct approach. The researcher also visited their lecture halls and was able to distribute the questionnaires after introducing the subject to the respondents who filled the questionnaire and handed over to their class representative after their lecture.

3.10 Summary

This chapter described the research method used which was descriptive, design, the area of the study, the target population, sample and sampling technique and the sample size. Data collection methods were well stated and the justification for the use of questionnaire for data explained research instruments such as a pilot study was carried out and the findings of the pilot study given. The chapter also sought the validity and reliability of the study by the pilot study undertaken and data collected to compute the reliability. Ethical issues were considered, confidentiality of information adhered to and data analysis and presentation in relation to research questions and objectives stated. Using 96 questionnaires data were collected from the postgraduate students of school of business and analyzed.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the data that was collected regarding access and utilization of digital information services in academic libraries with reference to the University of Nairobi. The research was conducted on sample size of 100 respondents out of which 63 respondents completed and returned the questionnaires making a response rate of 63%. Mugenda and Mugenda (2003) states that, a response rate of 50% and above is a good for statistical reporting. The study made use of frequencies (absolute and relative) on single response questions. On multiple response questions, the study used Likert scale in collecting and analyzing the data whereby the scale of 5 points was used in computing the means and standard deviations. The results were then presented in tables, graphs and charts as appropriate with explanations being given in prose.

4.2 Background Information

The study initially sought to inquire information on various aspects of the respondents' background, age and academic qualifications. This information aimed at testing the appropriateness of the respondent in answering the questions regarding access and utilization of digital information services in the University of Nairobi.

4.2.1 Respondents' Library

In this aspect the aim was to establish the library of the respondents, whose summary of the findings are as indicated in figure 4.1 pg. 32. The results depict that majority of the respondents library was JKML (90.5%), and only 9.5% of the respondents used MBA library. Finding reveal that majority of the respondents used JKML as their preferred library.
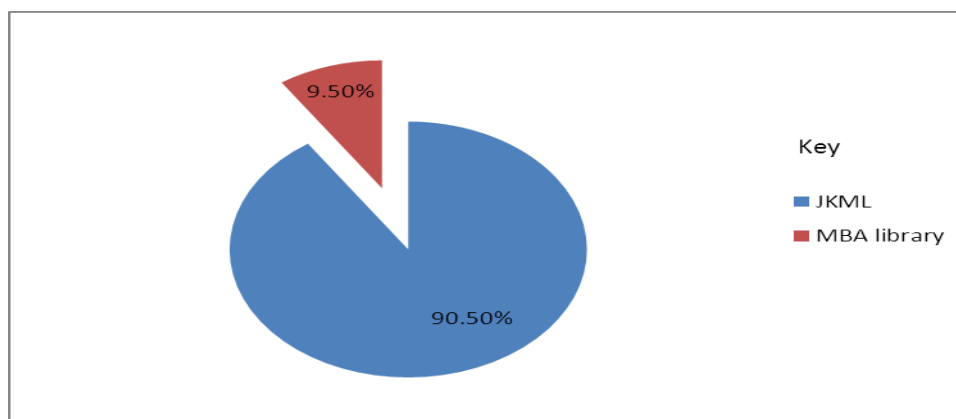
Figure 4.1: Respondents' Library

4.2.2 Degree Programme and Level of Study

The study sought to establish the respondent's degree programme of study. Summary of the findings indicate that all the respondents (63) were postgraduate students of the school of business representing 100%. In addition, the study established the level of study of the respondents. Findings reveal that all the respondents were masters' students. This shows that respondents were educated and informed to give reliable responses.

4.3 Level of Awareness Regarding Digital Information Services in the Library

4.3.1 Different Digital Information Services

The study established the different digital information services available and accessible through library's homepage. As shown in the table below. The study findings shows that majority of the respondents used electronic journals (60%), 36% accessed online public access catalogue, 33% preferred electronic books and 33% chose institutional repository. The study found out that majority of the respondents used electronic Journals as the preferred digital information resources.

Table 4.1: Different Digital Information Services

No.	Digital Information Resources	Frequency	Percentage
1.	Online Public Access Catalogue	36	57.1
2.	Electronic Journals	60	95.2
3.	Electronic Books	21	33.3
4.	Institutional Repository	21	33.3
5.	Web Portals	18	28.6

4.3.2 Location of Accessing Digital Information Resource

The study sought to establish the location which respondents' access digital information resources most often, which findings are shown below. The study findings shows that majority of the respondents used the University library to access digital information resources (42.1%), while 32.6% indicated home , and 22.2% preferred university computer lab. Others (3.1%) indicated the office; own laptop and cyber to access the digital information resource. The study revealed that majority of the respondents most often used the university library to access digital information resources.
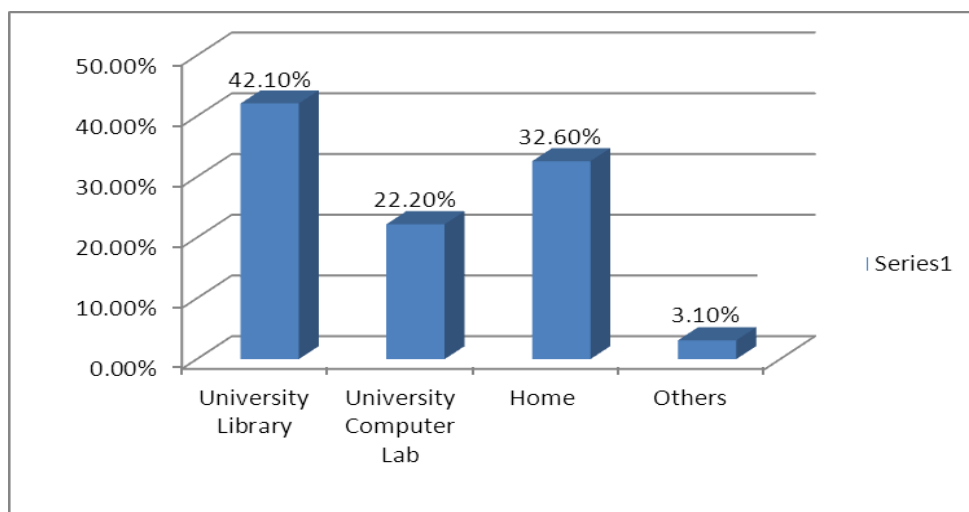
Figure 4.2: Location of Accessing the Digital Information Resource Most Often

4.3.3 Internet Connectivity and Digital Information Services

The study established the relation between internet connectivity and access to digital information resources and services in the library. Summary of the findings are tabulated in table 4.2. The study findings shows that majority of the respondents (42.9 %) attested that internet connectivity access to digital information resources and services in the library was reliable. 23.8% said internet connectivity access to digital information resources and services was very reliable, while 18% noted that it was unreliable, and 14.3% were uncertain. The study established that internet connectivity access to digital information resources and services in the university library was reliable.

Table 4.2: Internet Connectivity and Digital Information Services

No.	Internet Connectivity	Frequency	Percent
1.	Very reliable	15	23.8
2.	Reliable	27	42.9
3.	Uncertain	9	14.3
4.	Unreliable	12	19.0
	Total	63	100.0

4.3.4 Reasons for Using Digital Information Services in the Library

The study sought to find out respondents' reasons for using digital information resources and services in the library. Summary of the findings are as shown in the figure below.

The study findings shows that majority of the respondents (85.7%) attested that the reason for using digital information resources and services in library was for writing class assignments. 81% noted it was for writing thesis, while 28.6 % indicated keeping up with the progress in relevant field, and 4.8% said writing up paper for publication. The study established that digital information resources and services in library were majorly used for writing class assignments.
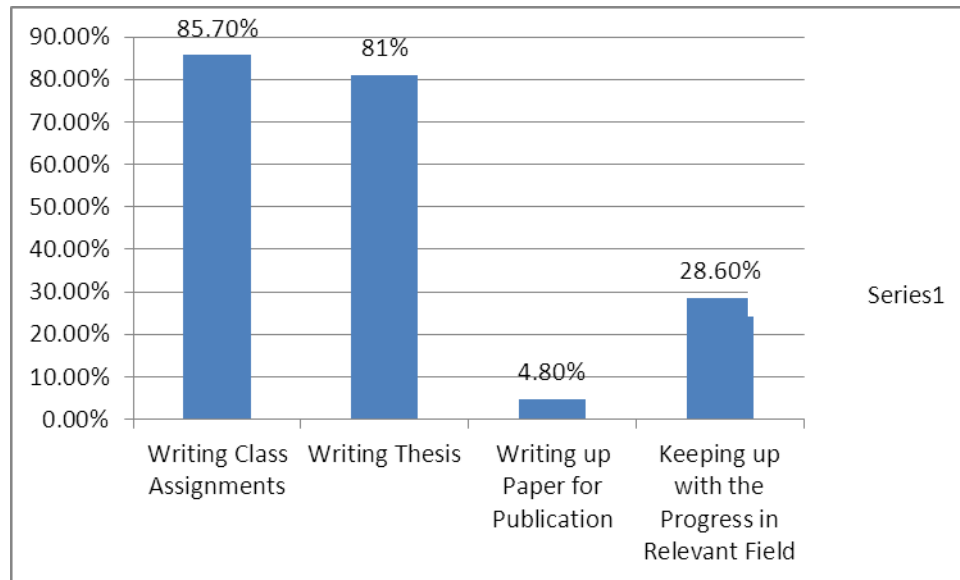

Figure 4.3: Reasons for Using Digital Information Services in the Library

4.4 Skills and Competence

4.4.1 Rate of Using the Digital Information Services

The study found out the respondents' rate of using digital information services in the library. The findings are as indicated in the table 4.3 pg. 35. The study findings shows that majority of the respondents (52.4%) used digital information services occasionally. 33.3% indicated weekly, while 9.5% noted daily, and 4.8% never used the digital information services at all. From the findings it can be deduced that majority of the respondents occasionally used digital information services.

Table 4.3: Rate of Using the Digital Information Services

No.	Rate of Use	Frequency	Percent
1.	Daily	6	9.5
2.	Weekly	21	33.3
3.	Occasionally	33	52.4
4.	Not at all	3	4.8
	Total	63	100.0

4.4.2 Approaching the Librarian for Training

The study sought to find out respondents' rate of approaching the librarian for training on the use of digital information resources and services. Summary of the findings are indicated in figure 4.4. From the study, the majority of the respondents (38.1%) indicated of seldomly approaching the librarian for training on the use of digital information resources and services. 23.8% stated sometimes, while 14.3% of the respondents' noted often. On the other hand, 23.8% never approached the librarian for training. The study shown that majority of the respondents rarely approached librarians for training on the use of digital information resources and services.
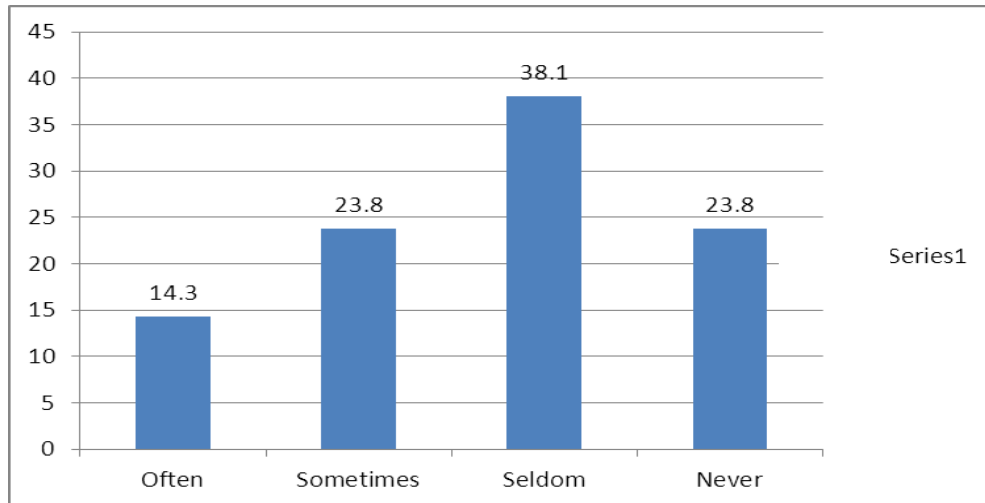
Figure 4.4: Rate of Approaching the Librarian for Training

4.4.3 Training of the Respondents on the Use of Digital Information Services in the Library

The study sought to establish whether respondent had been trained on the use of digital information services in the library as highlighted in the figure below. The majority of the respondents (57.1%) agreed of being trained on the use of digital information services in the library, while 42.9% indicated of not being trained on how to use the electronic resources. The study displayed that the majority of the respondents had been trained on the use of digital information services in the library.
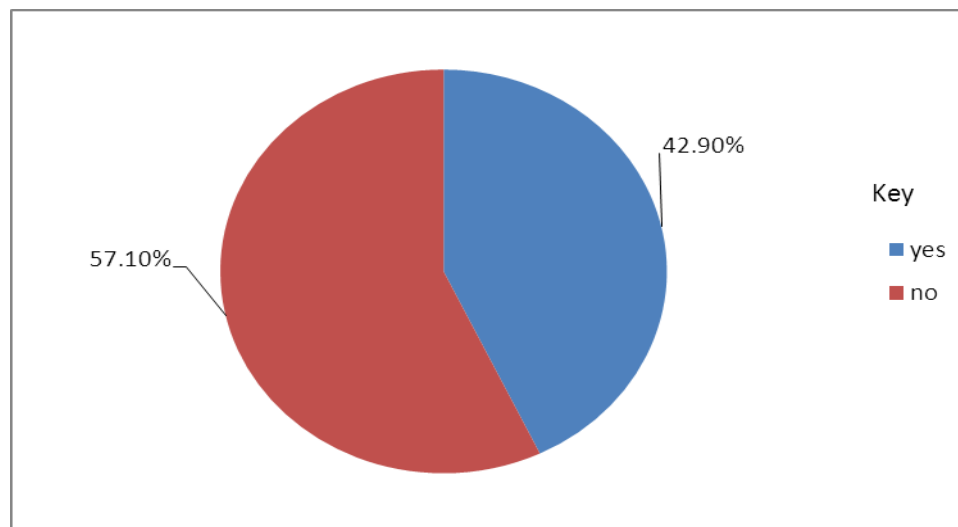

Figure 4.5: Training of the Respondents on the Use of Digital Information Services in the Library

4.4.4 Respondents' Opinions on Digital Information Resources in the Library

The respondents were asked to indicate opinions about digital information resources in the library as demonstrated in table 4.4 pg. 37. The results imply to a great extent that, the library users had expressed lack of training as a major problem in access and utilization of digital information services (mean= 3.8095), and the users (students) believed that legal issues restricted access to provision of adequate information (lack of full-text, abstract and restricted to purchase only) (mean= 3.3810). On the other hand, agreed at a small extent that, the library users are familiar with the usage of digital information services (mean=1.8571) and that students regularly seek online help from the library staff (mean=1.4762). This implies that the library users had expressed lack of training as a major problem in access and utilization of digital information services.

Table 4.4: Respondents' Opinions on Digital Information Resources in the Library

No.	Opinions of Digital Information	Mean	Std. Deviation
1.	The library users are familiar with the usage of digital information services	1.8571	.89546
2.	The library users have expressed lack of training as a major problem in access and utilization of digital information services	3.8095	.85868
3.	The library user (students) believe, legal issues restrict access to provision of adequate information (lack of full-text, abstract and restricted to purchase only)	3.3810	1.44165
4.	Students regularly seek online help from the library staff	1.4762	.80035

4.4.5 Challenges Faced when Using Digital Information Services

The respondents were asked to give opinions on the magnitude of the challenges faced when using digital information services. The summary of the findings are as indicated in the table 4.5 pg. 38. The results indicate to a very great extent that the major challenges faced when using digital information services were; lack of adequate search skills (mean= 4.3333), and lack of appropriate training on access and utilization (mean= 4.0952). Further, to a great extent the challenge faced when using digital information services was poor internet networks (mean=3.5238) and agreed to a small extent that students having

enough computers for access to digital information resources/services was a challenge (mean=2.5714). This implies that the major challenges faced when using digital information services included; lack of adequate search skills, and lack of appropriate training on access and utilization.

Table 4.5: Challenges Faced when Using Digital Information Services

No.	Challenges	Mean	Std. Deviation
1.	Lack of adequate search skills	4.3333	.84242
2.	The students have enough computers for access to digital information resources/services	2.5714	1.72004
3.	Poor internet networks	3.5238	1.51186
4.	Lack of appropriate training on access and utilization	4.0952	1.24063

4.5 Summary

In this chapter the results of the data analyzed are presented. In this chapter the results of the data based on the objectives of the study are presented. The findings drawn from the interpretation and analysis of the answers provided by the respondents are presented in forms of pie charts, tables and figures illustrating the findings of the study.

CHAPTER FIVE

SUMMARY OF THE FINDING, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of the findings, conclusion and recommendations of the study guided by objectives and research questions. The aim of the study was to determine access and utilization of digital information services in academic libraries: the case of university of Nairobi.

Objectives of the study included to:

- Establish the level of the user awareness of digital information services in University of Nairobi library.
- Determine access and utilization of digital information resources at the University of Nairobi library.
- Identify the challenges facing the library users in access and utilization of digital information services in University of Nairobi library.

5.2 Summary of the Findings

The study's findings are summarized as follows:

5.2.1 Background Information of the Respondents

One of the objectives of the study was to establish the background information of the respondents. The study reveals that majority of the respondents used JKML as the preferred. The study revealed that all respondents were at Masters Level. This implied that the respondents were well educated and informed to give reliable responses.

5.2.2 Level of the User Awareness of Digital Information Services in the Library

The first objective of the study was to establish the level of the user awareness of digital information services in University of Nairobi library as indicated in Table 4.1. pg. 32. The study found out that majority of the respondents used electronic Journals (e-Journals). The study also revealed that majority of the respondents most often used University library to access the digital information resource. Further, the study established that internet connectivity access to digital information resources and services

in respondent's library was reliable. Finally, the study established that digital information resources and services in library were majorly used for writing class assignments.

The findings were contrasting the Kemoni (2002) findings that indicated "The Utilisation of Archival Information by Researchers in Kenya: A Case Study of the University of Nairobi". Objective was to ascertain the utilization of archival information by researchers and the extent to which the Kenya National Archival and Documentation Services was meeting their information needs. Opinions of users were collected by interviews. Similarly, Singh (2002) revealed that textbooks were most frequently used resources, followed by reference books and general books. Main purpose of visiting library was to prepare notes for students. Journals and textbooks were not considered very adequate. Almost all the faculty members favoured need for computerization of their libraries.

Related study, to ascertain the use of resources and services of library of JJM Medical College, disclosed that majority of users were visiting library to consult books or journals, and textbooks were the most used resources. Majority of the users were satisfied with physical facilities of library. The results were similar with Ogombo and Adomi (2003) findings that found out majority of the users visited library daily. About 59.6% students went to library to prepare for examination, while 54% users used library to prepare assignments.

5.2.3 Access and Utilization of Digital Information Resources in the Library

The second objective of the study was to determine access and utilization of digital information resources at the University of Nairobi library. From the findings it can be deduced that majority of the respondents occasionally used digital information services. This highlighted in table 4.3 pg. 35 will have a positive impact on the teaching and learning process. The findings are similar to Anunobi & Ezeani, (2011) study that established that creation of digital libraries has made essential impact on the teaching and learning process and digital information services has facilitated information services for users, independent of time and place. The study further argued that, this was much needed especially if active learning styles were to become common place. Also the study

show that majority of the respondents rarely approached librarians for training on the use of digital information resources and services. Further, the study implied that the library users had expressed lack of training as a major problem in access and utilization of digital information services.

The findings can be compared with those reported in the study published by the Research Information Network in November 2006 on use of resource discovery services. This found out that a lack of formal training in using discovery services; was a major challenge although this was not seen as a problem by the research community, and librarians viewed researchers as highly conservative in the range of tools used. Makori (2009) observes that the digital environment has radically changed the way researchers found articles, as well as how to access, retrieve and use the resources. To do so, researchers must master an array of finding tools that themselves form part of the complexity of materials and services incorporated in modern digital libraries that have been described as a cascade of interactions at the interface. Librarians and users must make sense of this cascade, and librarians must be the guides of users in this respect. According to Makori, Skills training is a big issue.

5.2.4 Challenges Faced Regarding Access and Utilization of Digital Information Services in the Library

The study revealed that that the major challenges faced when using digital information services were; lack of adequate search skills, and lack of appropriate training on access and utilization. This is clearly indicated in table 4.5. pg. 38. The study findings are similar to research findings which showed that law students lacked information skills Makri, Blandford and Cox (2006). Makri (2007) findings showed that law students found it difficult to use digital law libraries. On further inquiry, it was found that the difficulty arose from poor knowledge of the digital library system rather than poor knowledge of electronic resources. The difference between skill of library digital systems and general knowledge of electronic research were differentiated.

In Makri, Blandford and Cox (2006), law students were found to be always helpless in the database environment. The participants' found it difficult to research in digital environment despite the trainings they received on the use of library facilities.

In Jennifer (2011), students were found to lack information literacy skills while the author expressed dismay that there have been little studies on the information seeking behavior of this distinctive group.

In Yemisi, Janneke and Ocholla (2012), study indicated that Nigerian students were lacked information skills in accessing library information and communication technologies.

5.3 Conclusion

- The study outcomes show that respondents used electronic Journals (e-Journals). Most preferred university library to access the digital information resources. Internet connectivity access to digital information resources and services in is still a major issue respondent's library was reliable. Interestingly, digital information resources and services in library were majorly used for writing class assignments.
- The study revealed that respondents occasionally used digital information services that majority of the respondents rarely approached librarian for training on the use of digital information resources and services. This implied that library users had expressed lack of training as a major problem in access and utilization of digital information services.
- The study found out numerous challenges facing access sand use of digital information services. Lack of adequate search skills. It was established the respondents did not have adequate search skills in order to access and utilize information services in the library. It was established that due to lack of appropriate training most of the respondents had never trained or some only were trained during the orientation exercise which was considered quite inadequate as the respondents needed further trainings to be conducted. The respondents found it difficult to research in digital environment despite the training offered on the use of digital information services Makori (2009) observes that the digital environment has

radically changed the way researcher find articles as well as how to access; retrieve and use the resource to do so, researcher must master an array of finding tools that themselves form part of the complexity of materials and services incorporated in modern digital libraries that have been described as a cascade of interactions at the interface. Librarians and users must make sense of this cascade and must be guides of users in this respect. According to Makori (2009) skills training is a big issue. On further questioning were, unreliable network connectivity, lack of enough computers in the library and not user friendly interface.

5.4 Recommendations

From the study findings and conclusions, the following recommendations are made:

5.4.1 Formulation of Strategic Planning

In order to ensure successful utilisation and accessibility of digital information resources in libraries, the stakeholders should formulate strategic plan of ensuring proper and extensive training is offered to the library users on mechanisms of easier retrieval and utilisation of information of digital information resources in libraries.

5.4.2 Information Infrastructure

To ensure increased awareness of digital information services in the libraries, the policy stakeholders should came up with policies which increases the reliability of internet connectivity access to digital information resources and services in the library

5.4.3 Leadership and Management Practice

In order to ensure the library users acquires maximum benefit from the use of digital information services in the library, the relevant management should clearly define and explain to the users the easier methodologies to acquire adequate information.

5.4.4 Marketing and Promotion Strategies

In order to ensure improved training and usage of digital information services in the libraries, background sensitization of the digital information services to the users would be of great significant. Therefore, the study recommends that the policy makers should

ensure through and effective marketing and promotion strategies are enacted in the libraries to enhance mobilization of more library users.

5.5 Suggestions for Further Research

Several findings have found that library users lack adequate search skills, and appropriate training on access and utilization of library digital services.There have been little studies on the information seeking behavior of this distinctive group and therefore researching on information seeking behavior could be the appropriate area for further research.

5.5.1 Information Seeking Behaviour

Several findings have found that library users lack adequate search skills, and appropriate training on access and utilization of library digital services.There have been little studies on the information seeking behavior of this distinctive group and therefore researching on information seeking behavior could be the appropriate area for further research.

5.5.2 Training and Strategy Formulation

The study suggest that thorough research should be carried out to assess how strategic planning and extensive training offered to the libraries affect effective use of digital information resource in the libraries.

5.2.3 Management and Information Access

The study further proposes that there should be a study to be carried out on how management practices affects the accessibility of digital information resources to the users.

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APPENDIX I
INTRODUCTION LETTER

Alice Ndakalu Okongo
Department of Library and Information Science
University of Nairobi
P.O. Box 30197-00100
Nairobi.

Dear Respondent,

RE: INTRODUCTION LETTER

I am a Master of Library and information Science student in the Department of Library and Information Science, University of Nairobi. At present, I am conducting a research titled; *Access and Utilization of Digital Information Services in Academic Libraries: The Case of University of Nairobi.* The purpose of this study is to collect data and information from students and staff of the University of Nairobi.

You have been selected to participate in this study. The information and opinions you provide are purely for academic purposes of the study and shall remain strictly confidential.

Thank you in advance for your cooperation.

Yours faithfully,

Alice Ndakalu Okongo
C54/61397/2013

APPENDIX II

QUESTIONNAIRE FOR POSTGRADUATE STUDENTS

Instructions

Please indicate your response by ticking the provided boxes for questions that require suggestions or comments, please use the provided space.

Background Information

1. Name of the library_____

2. Degree programme of study _____

3. Level of study

    (a) Masters ☐

    (b) PhD ☐

Digital Information Services

4. Which are the different digital information services available and accessible through the university homepage?

    a) Online Public Access Catalogue ☐

    b) Electronic Journals ☐

    c) Electronic Books ☐

    d) Institutional Repository ☐

    e) Web Portals ☐

5. From which location do you access digital information resources most often?

    a) University library ☐

    b) University computer lab ☐

    c) Home ☐

    d) Any other _____

6. How often do you find the internet connectivity in relation to access of digital information resources and services in the library?

    a) Most reliable ☐

    b) Very reliable ☐

☐

☐

☐

52

c) Reliable

d) Uncertain

e) Unreliable

Explain the reason for your answer_____

7. What are reasons for using digital information resources and services in the library?

   a) Writing class assignments ☐

   b) Writing a thesis or project ☐

   c) Writing up a paper for publication ☐

   d) Keeping up with the progress in relevant field. ☐

Skills and Competence

8. How often do you use the digital information services ?

   a) Daily ☐

   b) Weekly ☐

   c) Monthly ☐

   d) Occasionally ☐

   e) Not at all ☐

9. How often do you approach the librarian about training on the use of digital information resources and services?

   a) Always ☐

   b) Often ☐

   c) Sometimes ☐

   d) Seldom ☐

   e) Never ☐

10. Have you ever been trained on the use of digital information services in your library?

    (a) Yes ☐

    (b) No ☐

    If the answer is yes, did you find it useful for your information searching?

11. Indicate the extent to which the following statements are true about digital information resources of the library using the scale below 1 – Little Extent, 2 – Moderate Extent, 3 – Large extent, 4 – Great Extent and 5 - very Great Extent.

No.	Statement	1	2	3	4	5
1.	Library users are familiar with the usage of digital information services					
2.	Library users have expressed lack of training as a major problem in access and utilization of digital information services					
3.	Library user (students) believe, legal issues restrict access to provision of adequate information (lack of full-text, abstract and restricted to purchase only					
4.	Students regularly seek online help from the library staff					

12. Indicate the magnitude of the challenges faced when using digital information services based on the scale: 1 – Little Extent, 2 – Moderate Extent, 3 – Large Extent, 4 – Great Extent and 5 - Very Great Extent.

No.	Statement	1	2	3	4	5
1.	Lack of adequate search skills					
2.	The students have enough computers for access to digital information resources/services					
3.	Poor internet networks					
4.	Lack of appropriate training on access and utilization					

13. Please add any other comments or suggestions about the library digital information services

_____

_____

_____

THANK YOU