

**THE USE OF INFORMATION COMMUNICATION TECHNOLOGIES AT THE  
UNIVERSITY OF ZAMBIA MAIN LIBRARY**

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## **LIST OF ACRONYMS**

ICTs.....	Information and Communication Technologies
UNZA.....	University of Zambia
UNZALIB.....	University of Zambia library

## **CHAPTER ONE: INTRODUCTION**

### **1.0 Overview**

Information and Communications Technology have brought about a paradigm shift in the way library operations are being carried out. The digital revolution motivated by technology innovation has transformed academic libraries. Technology has impacted on every sphere of academic library activity such as acquisition, organization, storage, retrieval and delivery of information both in print and digital format. Academic libraries support the core business (teaching, learning and research activities) of the parent institutions. Therefore, the need for these institutions to innovate becomes imperative.

It is for the above reason that this research aimed at assessing the use of ICTs in the in-house operation of the UNZA library, this research consisted of five chapters, chapter one, two and three will constitute the proposal which was mainly concerned with justifying why this research topic was chosen and the methodology used among others, the fourth chapter was mainly concerned with the findings of the study and the fifth chapter was concerned with discussion of the findings, conclusions and recommendations.

### **1.2 Background**

Information communication technologies have become common place entities in the aspects of life including libraries. In the present age of information explosion, the growth rate of information and knowledge is faster than ever before and still accelerating. Information is a dynamic and unending resource that affects all disciplines of human life. Hence, it has been supporting education, research, the growth of libraries and developments (Satyanarayana, 2015). Libraries have always been the source of information and knowledge and they have been fulfilling the information needs of the users for centuries in the traditional way. But the last two decades have brought revolutionary changes in the library services (Walter & Lankes, 2015). Information and Communication Technologies have had a profound impact on the way libraries activities are done.

Many library operations have been enhanced with these technological transfers and these ICTs are necessary for the smooth operation of any type of library, be it

academic, special or public libraries among others. Library managers are moving away from using manual work to manage their daily operations to new ways of doing things with the help of ICTs such as computer hardware i.e. printers, scanners, computer catalogues and computer software packages.

A library plays an important role in the academic institution providing access to world-class information resources and services and stimulating academic research in the country. Hence, the success of any educational institution depends upon its library, as library services are fundamental, which affect the whole educational system.

The University of Zambia was established in 1965 under the university act and officially opened its doors to the public in 1966 simultaneously with UNZA library. The opening ceremony for the main library building was officiated by the first republican president Dr. Kenneth Kaunda. The vision of this institution is eminent university driven to pursuit of knowledge, innovation and social responsiveness with a mission to provide relevant, innovative and demand-driven higher education for socio-economic development (UNZA, 1999). Through this mission, the university seeks to contribute to the socio-economic development of Zambia using its core values in the training of students who later become vital stakeholders in the development process of the country. The core values applied in the operation of the institution includes; academic freedom, accountability, equity, excellence, green environment, innovation and integrity (ibid).

The mission is achieved through the various schools the university is made up of which are: the school of education, natural science, veterinary, agriculture, engineering, business, mines, law, school of humanities and social sciences and the school of medicine (Zulu, 2015).

Through these schools, the university performs three major functions which are training, research and the provision of informed public service. Training is achieved through the various programs that the university offers for instance development studies, library and information science, adult education to mention a few. The research function is attained at two levels, under-graduate and post-graduate levels. Post-graduate research is research undertaken by students and faculty who are

pursuing higher level degrees. Under-graduate research is undertaken by students who are pursuing bachelor's degrees. These researches are vital for academic credit, and sometimes necessary for government and other stake holders to make policy decisions. The other major function of a university is to provide informed public service. In a literal sense informed public service refers to services that are offered to the community by knowledgeable individuals (Bell, 1974).

The UNZA main library has over 170 000 volumes, 1200 journals, CD-ROM facilitates/ and so on in its collection. It is made up of four divisions which includes; readers service, special collection, technical services (cataloguing and classification, serials and acquisition) and bindery and photographic units (Mwacalimba, 1999).

The mission of the main UNZA library is to provide ready and efficient physical and bibliographic access to information consistent with the teaching and research interests of the university of Zambia faculty and the learning needs of UNZA students (UNZA, 1999). The library compliments the different schools by providing information resources physically displayed on decks, For instance, deck eight which consist of information on library and information science. In other words, library helps its mother institution the University of Zambia to achieve its mandate or overall objective (Zulu, 2015).

In addition to the above, it was observed that ICTs played a vital role in helping the library achieve its mission. ICTs have evidently improved the efficiency and effectiveness of the library operations and service provision. Computerization of all the library house-keeping operation is known as Library Automation (Basahuwa, 2017). According to Husain & Nazim (2015) housekeeping operations comprises of collection development, circulation, serial control and organization of library materials. Depending on the type of library, all or some of these functions may be computerized according to their priority. It is important to note in this context that Library Automation has now become absolutely essential in all libraries and UNZA is not an exception.

In spite of the quick adoption of information communication technologies in libraries in developing countries, the training and attitude towards them has not been a match

and UNZA library is no exception. Their application however, largely depends on the attitudes of librarian towards them in their operations of library activities (ibid).

### **1.3 Statement of the problem**

The importance of ICTs in an academic library environment cannot be overemphasized. Consequently, there is need for librarians to move with the current trend in society not only to make work easier but also to consolidate and sustain the already implemented house-keeping practices in a more efficient and effective manner.

Interest in the computerization of the UNZA library dates back to 1974. By the late 1975 nearly 25% of the journal titles were automated using IBM punched cards. Despite this progress, the problem came in when the person who initiated the automation process was transferred to work as a lecturer under the department of library and information science. In addition to this, the person who remained spearheading the automation process left the country from 1977 to 1981. During this period the library automation exercise was abandoned due to lack of support from the library leadership (Mwacalimba, 1999).

In addition to the above, the following were the problems that also contributed to the slowing down of the automation process. Firstly, ICTs were underused due to the financial constraints that most libraries face. The issue of inadequate funding made it difficult for them to purchase the various types of equipment that may assist the library to improve the efficiency and effectiveness of its internal operations.

In addition to the above, the limited use of ICTs was also attributed to resistance to change by the employees (Reitz,2004). As a result, consistency in use of ICTs has become a problem for most academic libraries, UNZA library inclusive. This is so because there are new and improved ICTs being developed very rapidly, academic libraries often find it difficult to keep up with the trends.

There has been a nose dive in terms of information regarding the use of ICTs at UNZA library. This makes the University Library to be perceived by some users as an Archival institution. A number of studies have been undertaken in the area of academic libraries and technology and one such study is that of Chewe and Chitumbo



(2018) who investigated information services delivery through innovation and technology at the University of Zambia.

So much has been said about how ICTS facilitate information retrieval but little was known about the role they play in the in-house activities. For this reason, it was imperative to assess the use of ICTS in the in-house operations of an academic library. The area of focus of this study was an academic library, specifically the university of Zambia (UNZA) library. Its main focus was on the in-house operations or activities of the library which included collection development, circulation, serial control and organization of library materials.

#### **1.4 The purpose of the study**

This study sought to assess the use of ICTs in the in-house operations of academic libraries.

#### **1.5 Objectives**

##### **Main objective**

1. To assess the use of ICTs in the in-house operations of the university of Zambia (UNZA) library.

##### **Specific Objectives**

1. To find out the types of ICTs that were used in the in-house activities of UNZA library.
2. To determine how ICT's facilitated the in-house operations of UNZA library.
3. To find out the extent to which ICTs were applied in the in-house activities of UNZA library.

##### **Research questions**

1. What types of ICTs are being used in the in-house operations of UNZA library?
2. How do ICTs facilitate the in-house operations of UNZA library?
3. To what extent are ICTs applied in the in-house activities of UNZA library?

## **1.6 Rationale of the study**

While other studies have been undertaken with regards to different aspects of the use of ICTs at the UNZA libraries, very little attention was given to the use of ICTs in specific in-house operations of the academic library. The study therefore endeavored to assess the use of ICTs in the in-house operations of UNZA library. It highlighted the various ways in which ICTs are used for the different in-house activities that go on in the academic library such as cataloguing, circulation and collection development. The main purpose of the study was to find out the types of ICTs used by UNZA library, how they facilitated its operations and to what extent they were applied. It was hoped that where there was call for improvement, the findings of this study would provide insight for the university of Zambia library and its management to further improve the use of ICTs in their operations. This study may form the basis for further studies of the use of ICTs in academic libraries not only to UNZA library but to other academic libraries.

## **1.7 Ethical consideration**

Although many researchers find it difficult to abide by research ethics, they are a very important component of a research. However, most researchers fail to adhere to all research ethics and eventually end up violating the rights of respondents. In most cases, where the rights of the respondents are violated, the results obtained from such a research are also likely to be biased. Research ethics demands that participants must be informed about the purpose of the research and the importance of their participation must also be communicated to them in the process called informed consent. Respondents must be free to withdraw from participating at any time because if they are forced, they will end up providing wrong information which may bias the findings of the research. Besides that, respondents' confidentiality must be guaranteed. Nothing that identifies a respondent should be put on the questionnaire or any data collection tool and the results ought not to identify any respondent as being part of the study (Sarantakos, 2002).

To make sure this study upholds such ethics, the research had put concerns of respondents into consideration and acknowledgement was made where necessary. No respondent was forced to participate in this research. The participation of the

respondent was at their own will so that information collected would give a true reflection of what is on the ground. Confidentiality was maintained throughout the whole process of the research.

## **1.8 Definition of concepts**

### **ICTs**

Information and Communication Technologies (ICTs) can be interpreted broadly as technologies that facilitate communication and the processing and dissemination of information by electronic means. This definition encompasses the full range of ICTs, from radio and television to telephones (fixed and mobile), computers and the Internet (Gerster and Zimmerman 2001.)

### **Library**

A building or room containing collections of books, periodicals and sometimes films and recorded music for use or borrowing by the public or the members of an institution.

### **Academic Library**

According to Wright (1994) an academic library is a library that is attached to a higher institution which serves two complementary purposes to support the school's curriculum and to support the research of the university and students.

### **In-house Operations**

Gates (2000) refers to in-house operations as all the housekeeping activities of a library such as collection development, cataloguing, circulation and serial control. Murihead (1994) also defined in-house operations as a group of basic routine operations related to acquiring, preparing and preserving the library documents for their maximum use

### **Collection development**

Collection development is the process of building the library materials to meet the information needs of the users in a timely and economical manner using information resources locally held as well s from other organizations. It comprises various stages which includes; user studies, marketing, selection, acquisition, evaluation and weeding of information resources (Kennedy, 2005).

### **Cataloguing**

Cataloguing is defined by Rowley (1998) as "the skill or art of organizing knowledge (information) for retrieval" usually cataloguing is done in the cataloguing department by professional cataloguers. Cataloguing in general involves the creation of bibliographic records of information resources that culminates into the construction of a catalogue which aids access to information resources in libraries and information centers

### **Circulation**

Library circulation comprises of the activities around the lending of library books and other materials to users (Thomas, 2002). This section deals with all functions of circulations which includes; membership issues, returns, interlibrary loan, reminder, over dues, reservations, recall etc.

### **Serial control**

A serial is any publication issued in successive parts which are intended to be continued indefinitely. These publications may be issued in print, non-print and/or electronic format. Sharma (1988) refers to serials control as an ongoing process that involves the control and recording of periodicals.

## **1.9 Summary**

This chapter, provided the introduction, background of the study, statement of the problem, general as well as specific objectives of the study, research questions, significance of the study, limitation of the study and lastly but not the least operational definitions of terms used in the study.

## CHAPTER TWO: LITERATURE

### 2.1 Overview

Many scholars in the area of library and information science have extensively researched and written on the role ICTs play in facilitating library services in academic libraries. This chapter therefore presented some of the view and written works about the role ICTs play in the library operations. ICTs are said to be critical in the effectiveness of modern libraries, this is so because they make in-house activities smoothly. It was for this reason that this chapter focused on the review of studies that investigated the extent to which ICTS were applied in the in-house activities of UNZA library. The literature was presented according to the flow of research objectives on this study.

### 2.2 ICTS Tools and Uses in the In-House Operations.

According to Adeleke & Olorunsola, (2010), Communication Technology is one of the components of ICTS and it comprises email, fax, telephone, voice mail and video conferencing. It noted that an Email for instance is the most effective way of formal communication; it is the best system to exchange messages and information in electronic format. Revolutionary changes have been seen in communication, because different types of information such as personal message, letter, article, computer programming files, pictures, sound and many others that make it possible to send or receive from any corner of the world within some fraction of second. At present, this is the most useful tool for different types of communication (personal, official communication and few others). This tool can be used to provide the required information at the right time. At present, SLibraries are using this live tool to serve the library users. it is argued that, through this, renewal or return (check-in) of library materials is questionable. It can also be considered as a medium for faster information

Cholin, (2005) reported that remote Control Technology as one of the component of ICTs that provides a platform to work with a remotely located computer system. It is a great development in the field of technology. He argued that by using this technology, one can easily provide any kind of services sitting far away from the destination. This ICT is generally used for remote control, online meeting, desktop sharing, web conference and file transfer from one computer to others. He also gave an example of RemoteXs Technology used by remote control technology which he defined as single-window

Platform to access all subscribed e-resources anytime anywhere. It has the ability to provide secure access to scattered e-Resources of the institution, bringing them under one umbrella, along with subscribed E-Journals, E-Books, and all other e-Content. This technology empowered institutions in systematically imbibing research values among faculty and students and take the right steps in creating a knowledge-base of their own.

This technology is very much helpful, where students are outside the campus and want to use their institution's resources for research and learning.

The literature above helped this study to understand the need of using information technologies such as remote control technology which allow different computers to be connected and share document regardless of the distance between them. It showed the necessity for librarian to know and use such technologies in operations as serial control and classification of online materials.

According to Mishra and Misra (2017) information technologies comprise of various technologies such as barcode reader, document scanner, computers and many others. The article indicated that a bar-coding technology is a barcode reader (or barcode scanner) electronic device for reading printed barcodes. Using barcode equipment's for circulation and stock verification is becoming more common, efficient and time saver. Document scanning on the other hand is useful for scanning text, image and content pages of books and providing great help for establishing digital and virtual library. This device is helpful in transforming printed materials into digital formats for online access.

It further pointed out that Computer technology has made a dramatic development in the information transmission process in every field of human endeavor has been made by the widespread use of computer technology. Computer can be referred to as the backbone, nucleus or hub of ICT application. In virtually all ICT applications, the computer is interfaced with other devices in order to function effectively. Software such as Open Source Software or the OSS is freely available computer software, which allows altering the source code and customizing the software to anyone & for any purpose. The article above helped the study establish different kinds of information technologies available in academic libraries and assess their usefulness in the operation of in-house activities.

According to Vinitha, K et al (2006) Internet is a source of serious subjects of the universe of knowledge. It has become information super highway and opened the

floodgates for scholarly communication. Internet is truncated version of internetworking, which refers to interconnecting two or more computer networks. Internet is described as a worldwide network of computer and people. It is an important tool for global on line services. Internet connects universities, colleges, schools and other educational institutions for information sharing and exchange. Access to information through Internet has changed the total scenario of librarianship. Interlibrary loan has been simplified and it's faster due to the emerging of the internet

### **2.3 Facilitation of In-House Operations Using ICTS**

According to Afolabi and Abidoye (2010) ICTs play an important role in facilitating library operations with regards to the libraries role to provide information services to support the educational, recreation, cultural, economic and technological endeavors of members in their respective communities. They referred to ICTs as enabling technologies (both hardware and software) that are necessary for delivery of data from point A to point B using wired and wireless media protocol networks. In the library context alike, information and communication technologies are software and electronic devices such as computers, telephones, internet, satellite system used to store, retrieve and disseminate information in the form of data, text image and others.

According to Islam & Nazmul (2007) a computer is one of the technologies that has evidently made library operations easier. Computers are now extensively used in the library operations and have had a great impact in the management of libraries and information centers. These are essential management tools which can be used to handle different operations more efficiently. They can be used for various activities such as information generation, processing, storage, analyzing and information dissemination. In libraries some of the areas where computer application takes place are acquisition of library materials, data entry, cataloguing and classification, circulation, serial control, documentation and allied services and information retrieval among others. This publication made it clear that ICTs such as the computer play a vital role in automating library operations. It also made it clear that modern libraries are migrating from a manual way of performing library work to a more efficient and effective computerized system.

Singh (2001) report found that Librarians use many Internet communications and service utilities in their operations. Includes the following; first, for Inter-Library Loan (ILL), to facilitate resource sharing, many libraries have been using ILL. The traditional inter-library loan operations are quite time consuming and labor intensive. With the advent of new technology, the electronic documents and various inter-library management tools such as Ariel and Avis have enabled the libraries to share their resources effectively and efficiently. Secondly, for Communication purposes internet has become the primary mode of communication which carries more than the combined total of the postal services of all countries in the world put together by the turn of the century. It is an important means of communication which provides a cheap and efficient means of mail transfer. Libraries can use this facility extensively in the acquisition process to communicate with the publishers, book sellers and vendors across the globe.

Thirdly, in circulation, the internet has made the circulation of in house document much easier. After the technical processing, the new books documents can be placed in the open public access catalogue(OPAC) on the day of acquisition itself and readers with internet connection at home or at university can browse and reserve the books sitting right at their offices or at home, within seconds after arrival of the book in the library. Fourthly, for Reference and Information service, the internet is gaining popularity. Reference librarians use a multitude of information sources to answer the question they may encounter and these are called ready reference collection. In addition, the internet is used in the Technical Processing/ Classification & Cataloguing of library materials. Preparing standard catalogue without much effort has become possible due to internet. Librarians can check the catalogues of other libraries like that of Library of Congress and confirm the information required for a record which can be easily ascertained from the original document.

The findings of this study concluded that internet is a means to speedy flow of information. It is a network of computers, communicating with others. It proved to be very useful to know that the internet provides a worldwide platform for information sharing among individuals, institutions and organizations and that its use in libraries



enables the provision of current and useful information to enhance productivity and good library governance.

In a study carried out by Townley (1995) shows the relevance of electronic mail (E-mail) in libraries was clearly pointed out. The potential uses of electronic mail in libraries can be divided into two categories: general office or business applications, and library specific applications. Since electronic mail allows the sender to relay a message in his/her own words regardless of the length or complexity and also get a receipt from the system when the message has been read by the recipient, telephone tag is greatly restricted. If a telephone conversation is needed, an appointment can be set up via electronic mail. To identify the main uses of email, factor analysis of each variable in the study was carried out. It was found that three factors have statistical significance for email users. From an empirical point of view, these factors are the most important findings of the study. Our major finding is that the staff uses email to improve communication and increase productivity. By participating in internal and external email, the staff knows much more about what is going on in their area of work and are in a better position to apply it. Email is also heavily used to support professional linkages with personnel at other libraries.

Often committee work is done, and difficult reference questions are answered, with the help of email. Electronic mail allows us to share ideas and debate issues. As a result, there is a much clearer understanding of library policies and agreement on its implementation. The finding from this study brought about a lot of insight with regards to the importance of electronic mail in a library. It was evident that this particular technology made the work of the librarians much easier than it was in the past. Communication is more effective and efficient because of emails and this has evidently proven to be helpful in prompt decision making.

Kamble and Hans (2012) study showed that Free Library software packages such as Koha, evergreen and Openbiblio among others are beginning to have a long term effect on smaller and medium size libraries. Those libraries are not able to purchase commercial software due to high cost of the library management system (LMS) they can have an option as an alternative of Open Source Software (OSS) for library automation. The software facilitates or makes library work easier because they allow the users to have the authority to download, use, modify and also redistribute the versions of the software. The

OSS features are developing and updating on collaborative and open efforts. OSS have helped libraries to improve control over collection, to have an effective control over the entire operation, to use and improve the existing services effectively, to share the resources among various libraries in a region, to reduce the duplication in the technical processes of library house-keeping operations and to share the existing resources. Hence, it is clear that, the library automation objectives are the entire process related to library administration work. The authors further indicated that library automation software facilitates library in-house activities by eliminating routine tasks or performing them more efficiently, they reduce the amount of time spent on material acquisition, serials management, budget administration and record keeping.

#### **2.4 Application of ICTs in the in house activities**

Fatoki (2004) reported that various universities such as Tsinghua University, Shanghai Jiaotong University, and Peking University have used the web to provide access to the online catalog; electronic resources; online information services, such as interlibrary loan; and others. Social media platforms such as Face book have made it possible for people to actually connect to one another through the Internet. According to Khan and Bhatti (2012), social media provides more opportunity for the library to reach its community, target specific audience, and give them a chance to interact with the library. By using face book, UNZA Library is now able to engage its users on issues of interest and enable them make inputs especially as it affects library services. This study concluded that it is important to identify ICT technology such as the web and social media platforms that can be applied in library housekeeping activities to carry out user studies in the collection development process as a way of improving library services.

From a study conducted by Ndidiamaka (2013) it was observed that the areas of library where ICTs are mostly used include: Cataloguing and Classification, Storage of Information, Information retrieval, it also shows that ICTs are used in reference services and Research. The findings from the above research were that ICTs are applicable to library services. Some of the ICTs readily available are computers, internet, printers, telephone, spine labeling machine, Barcode machines etc. These ICTs gadgets are used in carrying out different aspects of library services in the library. The ICTs resources are greatly used effectively in processing materials in the library services such as cataloguing

and classification, indexing, bibliographic checking, spine labeling etc. The study concluded that use of ICT has enhanced the effectiveness of library operations services such as cataloguing and classification, acquisition, processing storage, retrieval and dissemination operations.

Similarly, Oketunji (2000) remarked that ICT are used in the libraries to automate technical services such as cataloguing information, classification process. This is to bring about efficient reference and information services. It is usually used to network operations, such as cataloguing, circulation activities and authority list. It is also used to control project. If the applications are properly annexed, ICT helps the growths and development of libraries in different directions.

Gunjal and Dhamdhere (2013) revealed that inadequate technological infrastructure to support the integration of ICTs in the curricula. This refers to issues as poor or lack of national ICT policy, low internet connectivity, inadequate supply of electricity, inadequate number of PCs and lack of skills by the staff. Manda (2006) observes the lack of ICT knowledge and skills among staff. The problem of brain drain i.e. that staff sent overseas for training either do not return to their posts or are taken up by other organizations that are able to offer them higher remuneration. This suggests that in so far as re-skilling staff is concerned, opportunities are available but there is still no guarantee that the problem will be solved because of the prevalence of skills shortage at macro or national levels.

The study concluded that ICT skills are important as they are a pre-requisite for networking of e-library services and resource sharing. It also enables promotion of e-learning, usage of e-Journals, e-Books and creation of electronic institutional repositories. The operations in a library require ICT skills in order to achieve more efficient and effective functioning and for providing excellent library and information services. ICT infrastructure would involve hardware, software, and other telecommunication facilities. Sufficient ICT skill is very essential for the successful application of ICT in libraries. The application of ICT to store and process vast amounts of information coupled with the ability of information professionals to transmit this information from one location to another can have tremendous impact on the storage, retrieval, and dissemination of information in libraries.

A study taken by Eseohe (2014) showed that ICTs are applied in serials control, circulation and cataloguing among others. Serial is another problem area to which IT can assist. A computer assisted serials system can be a simple one which merely provides printout of a title and holding information with locations and call numbers or it can be very comprehensive. The latter may include, among others, a means of check in of program which use the receipt check-in/check-out data to automatically update holding information, display holdings or assist claiming of individual serial issues which have become over-due, notify volume (and their respective titles) which are ready for binding: prepare bindery notice and claims forms; maintain funds accounting, subscribe payment, and renew records. Such a system can function in either an on-line or batch mode of processing.

According to a study conducted by Chewe (2018) it was revealed that the university of Zambia library had not utilized information communication technologies adequately to help smoothen its in-house operation due to lack of resource, poor funding, poor internet connectivity, lack of technology literacy to mention but a few. This study helped identify the challenges faced by UNZA library. Pertaining to reference services and the circulation at UNZA Library, the study established that reference service is one of the innovative practices that have brought value addition to library service delivery.

Musangi (2015) study showed that reference librarians in academic libraries cannot stay static or traditional in their services or outreach to users, they need to harness technology and its capabilities in order to provide the information and literacy skills needed today by the 'net-gen' generation of users. This observation is so true of reference librarians at UNZA who are trained to employ in-depth knowledge and search strategies to meet user information needs. With the advancement in technology, UNZA Library has likewise innovatively integrated technology to meet the information needs of the users

In the same vein, the circulation of library materials has been made easy and given the library a good image from the user's view point. Modern library management software support barcode based circulation system. In such a system, a barcode reader scans barcode for accession number of a document and the barcode in turn acts as a pointer to the document file. It helps to minimize labour and error in data entry operation.

Omekwu (2002) discussed the challenges of information systems in modern libraries and observed that Hi-tech information system has perversely influenced all sphere of human endeavors. UNZA Library has not completely stood aloof in the utilization of ICTs as it journeys towards the improvement of library information services provided to its user community. UNZA Library has made several efforts to improve its operations too, including conducting user studies for undergraduate, postgraduate students and academic staff to find out their information need and so on.

However, the study reported that despite the fact that the university library has taken steps to improve its in-house operations through the above efforts, it still faces a lot of challenges. Even where users have access to computers, access is frustrating by the unavailability of connectivity to the internet service. The university has a very low internet bandwidth that hampers connectivity (Chewe 2018).

## **2.5 Review summary**

The above literatures helped in identifying different technologies and use in the in-house operations of the library. The literature also reviewed the role ICTs play in the automating of libraries. It was noted that ICT skills are important as they are a pre-requisite for networking of e-library services and resource sharing. Furthermore, the studies identified areas where ICTs are applied and some of the reasons why they may not be used in most academic libraries due to financial constraints. Therefore, it must be noted that the literature above only identified areas or rather in-house activities where ICTs are applied and the challenges faced. In order to fill in the gap left by earlier studies, this research endeavored in specifying the degree to which ICTs were applied in the in-house activities of academic libraries such as UNZA library.

## **CHAPTER THREE: METHODOLOGY**

### **3.1 Overview**

This chapter is called the methodology. It is the systematic and theoretical methods that were applied in this research. The methodology offers the theoretical underpinning for understanding which set of methods or best practices that were applied. It indicated the type of research design to be used, the total population, from which the sample was obtained, sampling procedure, data collection techniques and finally the type of data analysis methods that were employed when analyzing the obtained data.

### **3.2 Research Design**

This research was an evaluative study which dealt with assessing programs that have been implemented. This research assessed the use of Information and communication technologies (ICTs) in the in-house activities of the university of Zambia (UNZA) library in an attempt to draw a conclusion of how different ICTs make in-house operations easier and to what magnitude they are applied. Following this attempt, the study specifically set to find out the type of ICTs used, how they facilitate in-house operations and to what extent they are used in these various activities in UNZA library. This study contained both quantitative and qualitative research methods. It was hoped that this study would add new information to the already existing body of knowledge and that it might be of assistance to the UNZA library management with regard to decision making concerning ICTs.

### **3.3 Total Population**

The group from which the sample of the study was taken was from the staff members of the UNZA Library. The library contains 8 different departments and these include the bindery department, cataloguing and classification department, collection development, library administration, public service department, serials department, special collection department and technical services support. This study only required information from selected library departments such as cataloguing and classification department, collection development, public service department, serials department and special collection department respectively.

### **3.4 Sample Size and Sampling Procedure**

This study had a sample size of ten (10) employees from the University of Zambia library. The sample comprised of 2 library staff from each of the following departments; cataloguing and classification department, collection development, public service department, serials department and special collection department respectively. The target group provided information that constituted this research. The staff members were purposively selected and other methods of sampling such as the snowball method were employed. The study selected UNZA library staff because they were easily accessible and were the only ones suitable to provide the necessary information needed for the successful completion of this research.

### **3.5 Data Collection Techniques**

The data that was collected in this research was primary and secondary data and the information gathered was in relation to the topic under investigation in the view of achieving the objectives of the research.

### **3.6 Collection Tools**

This study used a self-administered questionnaire as a data collection tool. A questionnaire is a set of printed questions designed to collect primary information about a particular topic from the respondents. A self-administered questionnaire is a type of questionnaire that involves the respondent answering questions on his/her own words. This tool was appropriate because the study dealt with a literate sample.

The questionnaire consisted of both open and closed ended questions. Mostly closed ended questions were used to obtain information from respondents which made data analysis much easier and helped the respondents to answer questions within the direction of the research.

### **3.7 Data Analysis**

Data analysis can be defined as the process of organizing and examining the information gathered from the field in order to interpret or explain what it means and make sense out of it. The data collected from the field was raw and had no meaning of its own. Therefore, the essence of data analysis was to help the researcher interpret the gathered information and decide whether or not the objectives were met or achieved. The data

consisted of both quantitative and qualitative data obtained from information based on primary data sources as well as qualitative data because the data collection technique that was employed allowed free expressions or opinions from respondents.

The type of data analysis used included Microsoft Excel and thematic analysis. Microsoft excel helped in the analysis and presentations of quantitative data while thematic analysis was used for qualitative data analysis.



## CHAPTER FOUR: FINDINGS AND DISCUSSIONS

### 4.0 Background Information

4.0.1 The aim of this was to find out the gender of the respondents. It was discovered that 30% of the respondents were male while 70% were female.

4.0.2 This question was aimed at finding out the age range of the respondents. It was discovered that 20% of the respondents were aged between 31 to 36 years old while 80% were 37 years old and older.

4.0.3 The aim of this question was to find out from the respondents which departments they work in. The findings were as follows; 25% from the collection development department, 25% from the cataloguing and classification department, 25% from serials control, 25% from circulation.

4.0.4 The study sought to find out the qualifications of the respondents. It was discovered that 30% of the respondents have diplomas, 30% have degrees and 60% have master's degrees.

4.0.5 The study sought to find out how long the respondents have been working for UNZA library. It was discovered that 40% have been working for UNZA library between to 10 years, 20% have worked there for more than 10 years and 40% have worked at the library for more than 20 years.

### 4.1.0 Type of ICTS

In an effort to find out types of ICTS used in UNZA library operations, information was collected from four departments and these include; Cataloguing and classification department, circulation department, serial control department and collection development department.

4.1.6. In the attempt to find out the hardware tools used by the staff members, the respondents from serial control and collection development responded that they use computers and printers while the respondents from circulation use computers, Ethernet cables and sensitizing equipment, on the other hand respondent from cataloguing and classification said that they use scanners, printers and computers for their operations. Respondents from all departments claimed that they make use of the telephone in their

daily operations. On the type of software, respondents from circulation and serial departments claimed that they use unicorn/workflow, Microsoft and openbiblio while respondents from cataloguing and classification and collection development responded that they use koha and Microsoft office.

4.1.7. The aim of this question was to find out the software are commercial open source. Responses from various departments indicated that unicorn, D space, workflow, windows and Microsoft office are commercial software while openbiblio and koha are open source software.

4.1.8. This question sought to find out the appropriateness of the types of technology used by the UNZA library members. 60% of the respondent said that the technology is very appropriate while 40% said the technology is appropriate. None of the respondents said that technology is moderately appropriate or not appropriate.

#### **4.2.0 How ICT's facilitate In-House Operations**

4.2.10. The study sought to find out from the staff members if the use of ICTs in the in house operations at UNZA library has improved efficiency. It was discovered that all of the cataloguing and classification staff agreed that the use of ICTs in the in-house operations has increased efficiency. All of the members of staff from serials control department agreed that the use of ICTs in the in-house operations have increased efficiency. Only 50% of the staff members from the department of collection development agreed that the use of ICTs in the in-house operations have increased efficiency while the remaining 50% did not think ICTs brought about efficiency. Finally, all of the staff from the circulation department agreed that the use of ICTs in the in-house operations has increased efficiency.

4.2.11. The aim of this question was to find out from the library staff if the use ICTs has led to effective performance in library operations. From the cataloguing and classification, serials control, circulation department 50% of the staff members agreed that ICTs have led to effective performance in library work while the remaining 50% did not think it led to effective performance. Finally, from the collection development department 100% of the staff members responded that ICTs are very effective in the performance of library.

4.2.12. The study sought to find out if the use of ICTs led to the reduction of errors in performance of library work. It was discovered that 100% of the cataloguing and classification staff agreed that the use of ICTs in the in-house operations has led to a reduction of errors in the performance of library work. 100% of the members of staff from serials control department agreed that the use of ICTs in the in-house operations has led to a reduction of errors in the performance of library work. 100% of the staff from the circulation department agreed that the use of ICTs in the in-house operations has led to a reduction of errors in the performance of library work. Finally, only 50% of the staff members from the department of collection development agreed that the use of ICTs in the in-house operations has led to a reduction of errors in the performance of library work while the remaining 50% thought otherwise.

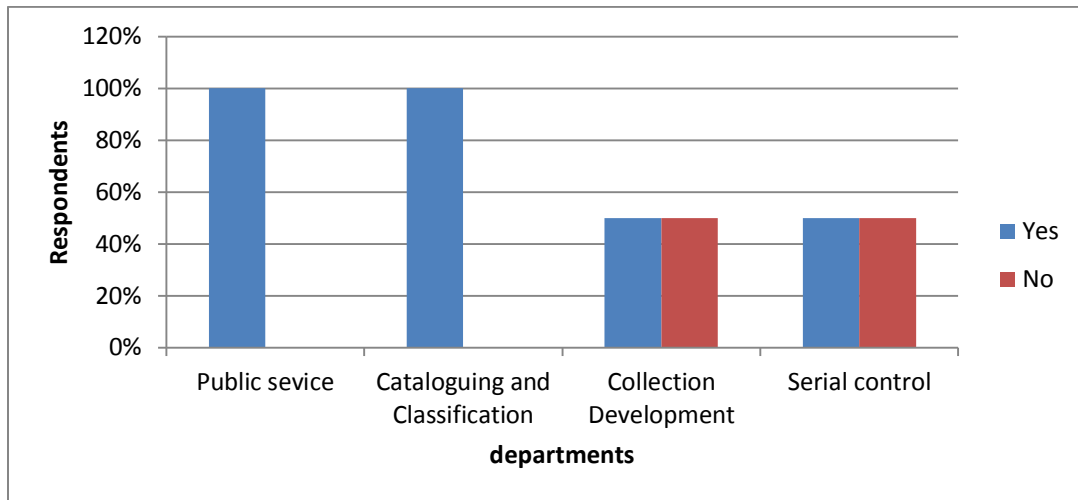
4.2.13. The study aimed at finding out how easy ICTs have made information processing in library work. It was discovered that all the staff members from the various departments responded that ICTs have made information processing in library work easy.

4.2.14. The study sought to find out from the staff members if the use of ICTs at UNZA library has improved the delivery of service. It was discovered that all the staff members from all the departments agreed that ICTs have indeed improved the delivery of service at the university library.

#### **4.3.0 Extent of Their Application**

4.3.15. This question aimed at finding out from the staff members if they require some sought of training to use the ICT's that are applied in the in-house operations of the library. The figure below represents the responses from the various departments to the question above.

Figure 4.3.1: Training requirements to use ICTs.



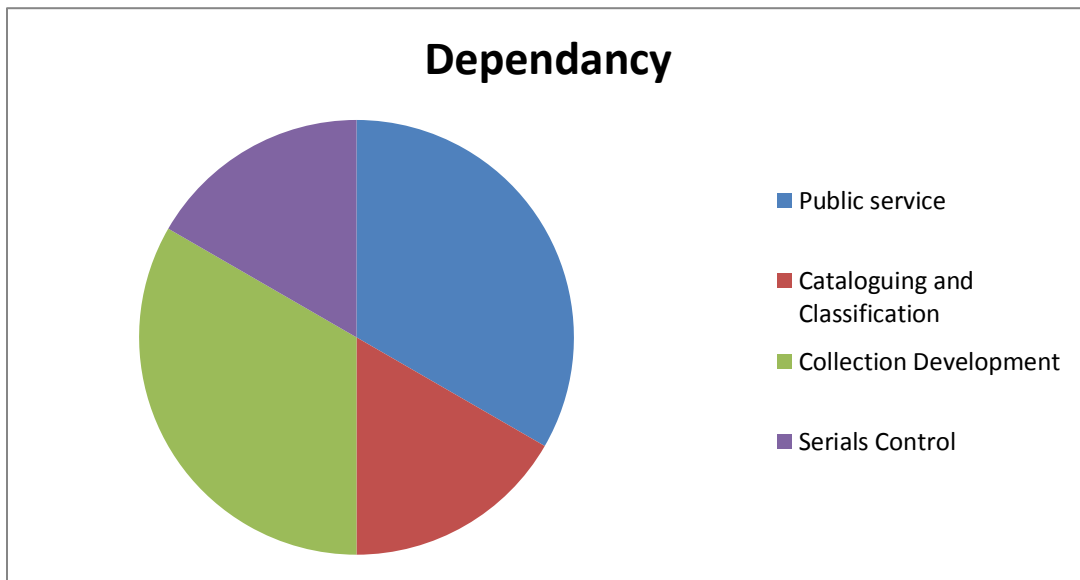
From the chart above, it was observed that from the public service department, 100% said yes and none of the respondents said no, from cataloguing and classification department, 100% said yes and none of the respondents said no, from the collection development department, 50% said yes and 50% said no and lastly from the serials department 50% said yes and 50% said no.

4.3.16. Another question was asked to find out the methods of training undertaken by the staff when using ICT's, the responses included the following; on-the-job training, interactive video, web based training programs, coaching or mentoring, lectures, outdoor training and group discussions and tutorials.

4.3.17. This question sought to find out how complex the ICTs used in the in-house operations were. From the responses, it was discovered that none of the respondents said the ICT's used were very complex, however, 50% of the respondents said they are complex, 50% said they are average, none of the respondents said they are not complex and none of the respondents said they were to very complex.

4.3.18. In an attempt to find out how dependent UNZALIB's in-house operations were on ICT's, the following pie chart was depicted.

Figure 4.3.2: Dependency of departments on ICT's.



From the pie chart above, it was discovered that from the public service department, 100% of the respondents said they were dependent on ICTs, none of the respondents were averagely dependent on ICT's and none of the respondents said they were not dependent on ICT's in their operations. From the cataloguing and classification department, 50% said they are dependent on ICT's, 50% said they are averagely dependent on ICT's and none of the respondents said they are not dependent on ICT's. From the collection development department, 100% said they are dependent on ICT's, none of the respondents said they are averagely dependent on ICT's and none of the respondents said they are not dependent on ICT's. And lastly from the serials control department, 50% said they are dependent on ICT's, 50% said they are averagely dependent on ICT's, and none of the respondents said they are not dependent on ICT's.

4.3.19. In an attempt to find out how load shedding has affected the use of ICT's in the library, it was discovered that load shedding has negatively affected the use of ICT's in the in-house operations among the responses included the following ways; disturbances in work, loss of data in a case were the computer is not on auto save, damaging the ICT's and slowing down of work processes.

4.3.20. In an attempt to find out in what specific activities are ICT's applied in each department, it was discovered that from the public service departments activities were ICT's are applied includes lending out of library materials, sending out due date reminders or notices to the library users through the use of Emails, returning of books, sensitizing machines, the number of days a patron is supposed to have the book when it's out of the library. From the cataloguing and classification department, computers are used when cataloguing, copy cataloguing is also made possible as well as online catalogue. From the collection development activates were ICT's are used includes when conducting user services, selection of library materials, Acquisition or purchasing of information resources and lastly from the serials control department ICT's are applied in activities such as verifying bibliographic information, determining if the title is already on the subscription, receiving and checking in, claiming issues not received, recording invoice and keeping statistics on procurement activities.

## CHAPTER FIVE: DISCUSSION OF THE FINDINGS

### 5.1.0. Types of ICTS in the library

5.1.6 ICTs are electronic technologies for collecting, storing, processing, and communicating information. They can be separated into two main categories: (1) those that process information (hardware), and (2) those that disseminate information, such as telecommunications systems (software) (Gunton, 1993). The hardware technology used by UNZA library staff are mainly computers, scanners and printers Ethernet cables and sensitizing cables. These technologies are used for creation, processing and storage information therefore all departments make use of these technologies to improve the performance of their work.

Other staff members make use of specific technology only suitable for their work such as circulation, which make use of sensitizing machines in their operations. Software technologies are telecommunications systems that are mainly used for retrieval and dissemination of information. Different departments use different software according to the needs however the most used software by library staff members is unicorn.

5.1.7. UNZA library uses commercial software and these are unicorn, Microsoft office and Dspace. These types of software are purchased for application and require a maintenance services after a period of time and there is a fee attached to these services. Due to the financial constraints the library is experience, maintenance of these software is a challenge, as a result, there are times when the system is down and this may affect the work of the staff and sometimes information may be lost if not properly handled. Open source software on the other hand are free software which do not require any license renewal fees before application or for maintenance services. The library also uses this software but not by all staff members.

The research findings are supported by the study conducted by Mishra and Misra (2017) which talked about the use of different types of ICTS in the in-house operation such as barcode reader the, internet, printers and computers and the use of open source software.

5.1.8. Appropriateness of the technology simply means whether the technology is suitable or not. The study found out that the types of technology used are very appropriate for application by library staff members. This means that the types of technology used in the library is not complicated or advanced for the understanding of the staff members. These

technologies are simple and easy to use and staff members are trained on how to apply these technologies. For example, the library undertakes training and development program to improve the skills of staff members in cases where there is an introduction of a new technology in the library so that they are able to apply the technology efficiently and effectively and therefore improve the delivery of services.

### **5.2.0 How ICT's Facilitate In-House Operations**

5.2.10. As it was found, the majority of the staff members thought that ICTs brought about efficiency in performing the in-house activities of the library. This can be attributed to the fact that they enhance workflow by reducing manual work there by minimizing the time spent to perform and complete tasks consequently saving time. In addition ICTs also reduce the cost encountered by the academic library. In light of this, the study is in support of a study by Afolabi and Abidoeye (2010) which claimed that ICTs are enabling technologies.

5.2.11. The majority of the staff members claimed that the use of ICTs has led to effective performance of library operations. This is so because they assist the library achieve its goals. In other words the ICTs that are being used in the library are fulfilling their purpose of facilitating the house keeping activities of the library. This supports the writings of Kamble and Hans (2012) who presented that Library software packages such as Koha, evergreen and Openbiblio among others are beginning to have a long term effect on the effective performance of libraries.

5.2.12. The majority of the library staff claimed that the use of ICTs has led to the reduction of errors when performing library work. This has improved the quality of library work. In collection development for instance, the use of ICTs in the acquisition process helps to provide accurate and timely financial information; and delivers the necessary management information reports whenever they are required. Serials control for instance has always been an area that is labor intensive demanding high degree attention to accuracy and detail and the use of ICTs will maintain accurately and timely the serials holdings data to achieve have effective and efficient control. In circulation the use of ICTs reduces errors by enabling timely and accurate recording of the loan



transaction, efficient and effective control over dues, fines and records as well as accurately provide information about status of a book and finally provide necessary statistical and management reports.

5.2.13. Information processing in library work has become easy as agreed by all the staff members of UNZA library. This is so because ICTs. Data creation and contextualization is done at a high speed and the large storage capabilities of the modern computers allow the library staff to store large quantities of valuable information such as records generated from the day to day housekeeping activities, storage of other documents that are stored in electronic formats. In addition, dissemination of information has been made extremely easy and faster with the use of ICTs. Methods of information dissemination such as blogs, mass e-mails, social networking websites and public service announcements among others are employed by the library and this has improved its delivery of service to the users.

5.2.14. As agreed by all staff members, the use of ICTs has improved the delivery of service at UNZA library. The catalogue for instance can now be accessed by users through the open public access catalogue (OPAC). ICTs have also enabled the library to digitize information resources which involves converting print resources to electronic form. Library users can also access some library materials virtually through the library website where a variety of E-resources can be accessed. This saves the time of the user. In addition, using ICTs as a tool has enabled the library to provide quality services to the users and also brought about efficiency. This supports the study by Islam and Nazmul (2007) that indicates how the use of ICTs like Computers have contributed to the improved quality of service that has led to better service delivery.

### **5.3.0 Extent of Their Application**

5.3.15. In light of the findings concerning the issue of training and the methods of training employed, it is evident that the majority of the ICT's used require some sort of training depending on how sophisticated the ICT's are this is so because ICT's require specific knowledge and skills in order for the staff to effectively apply them. Training is the process by which people are taught skills and given the necessary knowledge or attitude to enable them to carry out their responsibilities to the required standard. The purpose of training the staff is to enhance their performance, to

familiarize the employees with new systems, procedures and methods of working and to provide higher level of service to the library users through the use of ICT's.

5.3.15. It is also discovered that UNZALIB employed various training methods in order to impart new knowledge and skills on its staff and among the various training methods employed are; on-the-job training method which involves training the staff within the premises of the library, interactive video, web-based training programs, coaching or mentoring where employees have a one-on-one interaction training from an experienced ICT professional and outdoor training where library staff go out to attend conferences and seminars.

5.3.16. From the findings, it is evident that the majority of the ICT's used in the in-house operations are complex in nature hence the need for the training. By complex, ICTs are composed of a system of different things or components that are linked in a close or complicated way, therefore their application requires that the staffs understand these various component and possess the necessary skills and knowledge to be able to operate them effectively.

5.3.17. From the insight generated with regards to how dependent the library operations were on ICT's, it is evident that the majority of the in-house operations are dependent on ICT's. With the department of public service and the collection development department being the most departments that are largely dependent on ICT's as shown by Figure 4.3.2 which shows how the various departments depend on ICT's. There are some various activities that require ICT's such as computers to operate on a daily basis such as circulation of library materials, communicating to patrons through the use of emails as well as conducting user studies online among others.

5.3.18. It is evident that load shedding has affected library in a negative way. in the collection development department, there are activities that are disrupted by power cuts which includes acquisition of library materials where computers and the internet are used in the process, it has also affect circulation of library materials. Load shedding has also led to serious damages on the machineries or ICT's used which poses a challenge on the library. These findings are in support of the study conducted by Gunjal and Dhamdhare

(2013) which revealed that there is inadequate technological infrastructure to support the integration of ICT's such as issues of inadequate supply of electricity, inadequate number of PCs and lack of skills by the staff.

5.3.19. From the finding, among the various activities in which ICT's are applied includes; lending out of library materials, sending out due date reminders or notices to the library users through the use of Emails, returning of books, sensitizing machines, the number of days a patron is supposed to have the book when it's out of the library, online catalogues and conducting user studies. In light of the findings, the study is in support of the study conducted by Ndidiamaka (2013) where it was observed that the areas of library where ICTs are mostly used include: Cataloguing and Classification, Storage of Information, Information retrieval, it also showed that some of the ICTs readily available are computers, internet, printers, telephone, Barcode machines. The study is also in support of a study conducted by Oketunji (2000), who remarked that ICT are used in the libraries to automate technical services such as cataloguing information, classification process. This is to bring about efficient reference and information services to the library users.

#### **5.4 Conclusions**

1. In a nutshell, the findings above revealed that the university of Zambia main library use different types of their in-house operations such as the internet, barcode reader, printers, computers scanners, unicorn and openbiblio to enhance the delivery of the services. It was also discovered that Commercial software such as unicorn and Microsoft office are mostly used compared to open source software such as koha and openbiblio. The library uses simple and appropriate technology that is easy for staff to use during their operations and this improves their efficiency and effectiveness.
2. The findings of the study revealed that ICTs facilitate the in-house operations of UNZA library. The study concludes that housekeeping activities are done more efficiently and effectively. The use of ICTs at UNZA library has led to a reduction in the errors encountered when performing work thereby allowing the staff members to produce high quality services. Information processing has

become even easier at UNZA library. The collection, creation, manipulation, storage and dissemination of information has been facilitated by a variety of ICTs including computers, printers, scanners, internet, websites and UNICORN (integrated library management system) among others. In addition, the use of ICTs by the library has certainly improved its delivery of service. Therefore, it can be concluded that ICTs facilitate the in-house operations at UNZA library.

3. The findings of the study revealed that ICTs are applied in the in-house operations of UNZA library to a higher extent. All the departments apply and depend on ICT's in their daily routines, ICT's are applied in the following daily activities; lending out of library materials, sending out due date reminders or notices to the library users through the use of Emails, returning of books, sensitizing machines, copy cataloguing is also made possible as well as online cataloguing, conducting user services, selection of library materials, Acquisition or purchasing of information resources, verifying bibliographic information, determining if the title is already on the subscription, receiving and checking in, claiming issues not received, recording invoice and keeping statistics on procurement activities among others.

## **5.5 Recommendations**

1. In order to improve the operations of the library, there should be a complete shift from the use of commercial software to the use of free open source software which are less cost effective. commercial software requires financial resources to maintain and upgrade which can be challenge in university libraries in developing countries like Zambia. This should be done by management.
2. It has been observed that ICTs facilitate in-house operations of UNZA library. Therefore, to ensure this continues, the library should continue to fully utilize the available ICTs to facilitate the efficient and effective performance of in-house operations. In addition, UNZA library management should continue to source for trending library technology that will further facilitate the better enactment of in-house operations and advance efficiency in operations, quality service delivery, sustainable competitive advantage and improved performance will be the outmost benefits derived.

3. Library Management should introduce and invest in a block chain technology that can be used to build an enhanced metadata system, to keep track of digital-first sale rights and ownership and to support community-based borrowing and skill sharing borrowing. In other word, a technology that collect and store data.
4. Essentially, the university of Zambia library management should develop long term and short-term and in-house training programme for its staff members to enable them to effectively use and apply ICT's in the library operations. This must be done regularly because information technologies change rapidly. On a broader perspective, the library should formulate and implement an ICT strategy which in addition to being used to guide the improvement of ICT infrastructure, it should lay out the short and long term skill development programs.

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## **APENDICIES**

### **Appendix 1: Questionnaire**

**THE UNIVERSITY OF ZAMBIA**

**SCHOOL OF EDUCATION**

**DEPARTMENT OF LIBRARY AND INFORMATION STUDIES**

#### **INTRODUCTORY LETTER**

We are fourth year students of library and information science at the University of Zambia conducting a survey to assess the use of ICTs in the in-house operations of the university of Zambia (UNZA) library. With reference to this topic, you have been purposively selected to respond to this questionnaire.

We therefore wish to inform you that this research is purely for academic purposes and that the information you will provide will be treated with utmost confidentiality. In line with this, you do not need to indicate your name or any identification number anywhere.

#### **INSTRUCTIONS FOR THE RESPONDENT**

1. Carefully Read and understand the questions.
2. Tick the most appropriate response to the question or fill in answer to the space provided.
3. Return the questionnaire upon completion to the administrator.

**A. Background information**

1. What is your sex?
  - a) Female
  - b) Male
2. What is your age range?
  - a) 25yrs -30yrs
  - b) 31yrs- 36yrs
  - c) 37yrs and above
3. Which department do you work in?
  - a) Collection development
  - b) Cataloguing and classification
  - c) Serials department
  - d) Public service
4. What you are your qualification?.....
5. How long have you been working for UNZA library?.....

**B. Types of ICT**

6. from the table below, tick the software and hardware technologies used in your department.

Hardware	Software
i. Computers	i. Linux
ii. Ethernet cables	ii. Windows
iii. Expansion cards	iii. Microsoft office
iv. Projectors	iv. Open biblio
v. Printers	v. Koha
vi. Scanner	vi. Word press
Other.....	Other .....

7. .From the software technologies used above, which ones are open source or commercial software?

- a. Free software.....
  - b. Commercial.....
8. how appropriate is the technologies you use in the operations of under your department?
- a. Very appropriate
  - b. Appropriate
  - c. Moderately appropriate
  - d. Not appropriate

**C. How ICT's Facilitate In-House Operations**

9. Has the use of ICTs in the in-house operations of the library improved efficiency?
- a) Yes
  - b) No
10. Has the use of ICTs led to effective performance of library operations?
- a) Yes
  - b) No
11. Has the use of ICTs led to the reduction of errors in performance of library work?
- a) Yes
  - b) No
12. How easy have ICTs made information processing in library work?
- a) Very easy
  - b) Easy
  - c) Moderately easy
  - d) Not easy
13. Has the use of ICTs improved the delivery of service at UNZA library?
- a) Yes
  - b) No

**D. Extent of Their Application**

14. Do the ICT's applied in the in-house operation require training in order to acquire the necessary skills and knowledge to be able to use ICT's?
- a) Yes
  - b) no
15. If yes to the above, what are the training methods employed in order for the staff to be able to use ICT's?.....
- .....

.....  
16. How complex are the ICT's used in the in-house operations?

- a) Very complex
- b) Complex
- c) Average
- d) Not complex
- e) Not very complex

17. How dependant are the in-house operations of the library on ICT's?

- a) Dependant
- b) Average
- c) Not dependent

18. How has load shedding affected the inn-house operation of the various departments?

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.....

19. In what specific activities are the ICT's applied in the various in-house operations?

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.....  
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## Appendix 2: Proposed Timeframe

RESEARCH ACTIVITIES	TIME FRAME						
	April	May	June	July	August	September	October
Collection and literature review							
Designing and finalizing the data collection tools							
Production of data collection (questionnaires)							
Field visit (data collection)							
Data analysis							
Compilation research report							
Finalizing of the report							

### Appendix 3: Research Budget

RESEARCH ITEM		COST PER ITEM	QUALITY	TENTATIVE BUDGET
1.	<b>PROPOSAL</b>			
	Chapter one	13X3		33
	Chapter two	12X2		24
	Chapter three	12X1		12
	<b>Total for proposal</b>			<b>69</b>
2.	<b>STATIONARY</b>			
	Pencils	5	5X2	10
	Photocopying	0,50	100X0,50	50
	Reams of paper	25	2X25	50
	Pens	5	5X2	10
	Printing the final report	1	50X1	50
<b>TOTAL</b>				<b>K389</b>

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